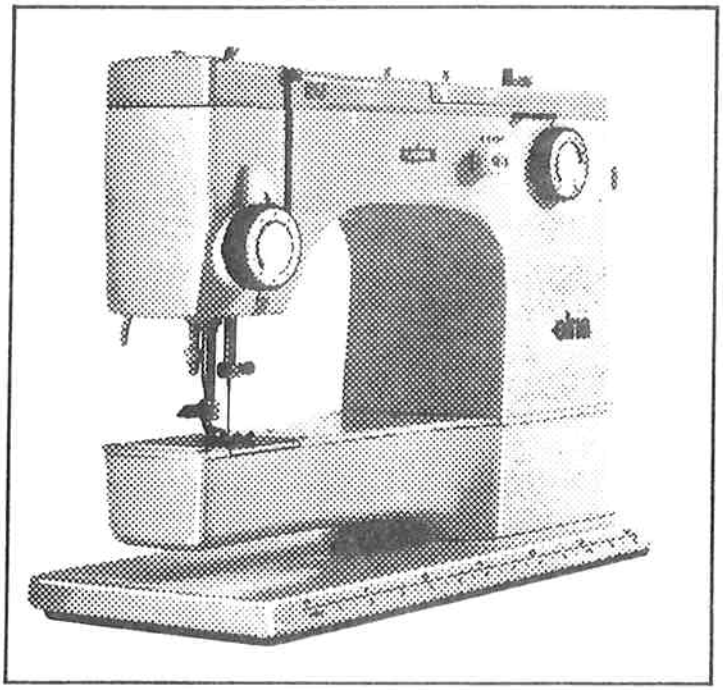
elna star series

Service Manual

459 862



elna	Free Arm	Flat Bed
EC	cl. 11	cl. 13
ZZ	cl. 21	cl. 23
SP	cl. 31	cl. 33
ST	cl. 41	cl. 43
SU	cl. 62	cl. 64
TSP	cl. 72	cl. 74

March 1977

TAVARO S.A. GENEVA

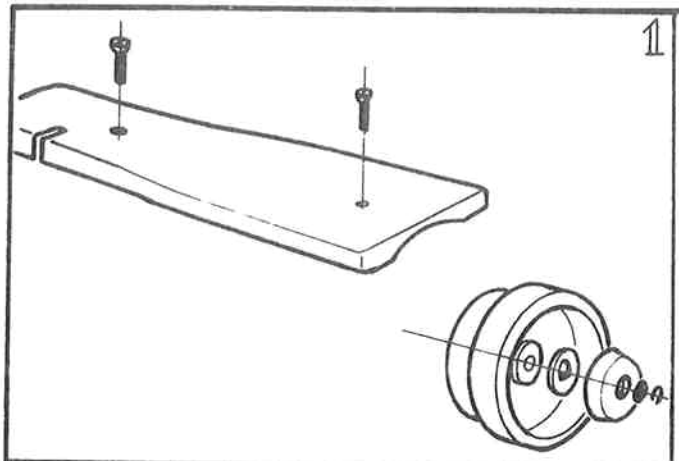
Printed in Switzerland

Printed in Switzerland

December 1968

Repairs

1



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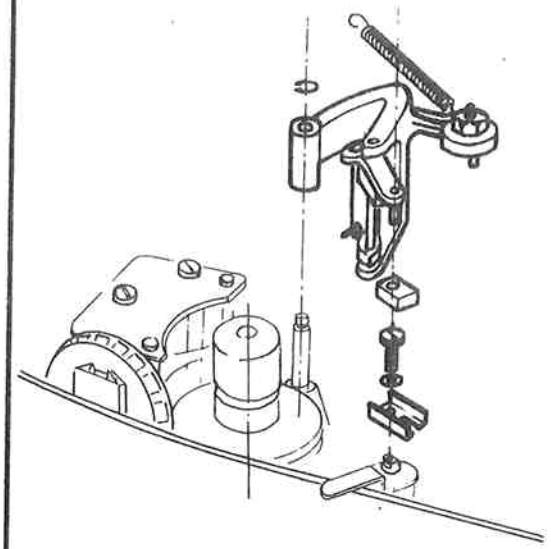

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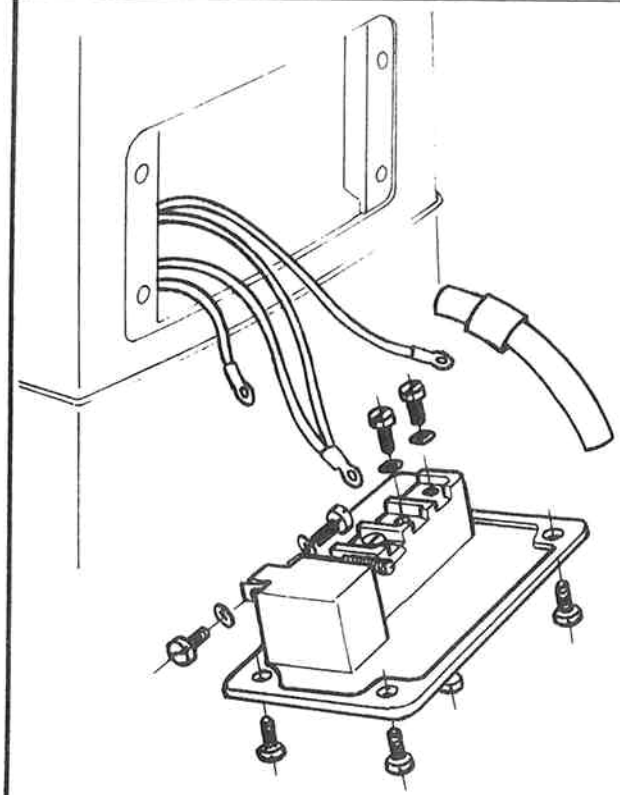
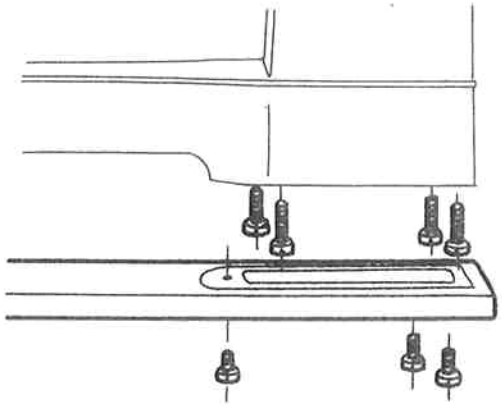


After having unscrewed the connection cables withdraw light cord completely.

4



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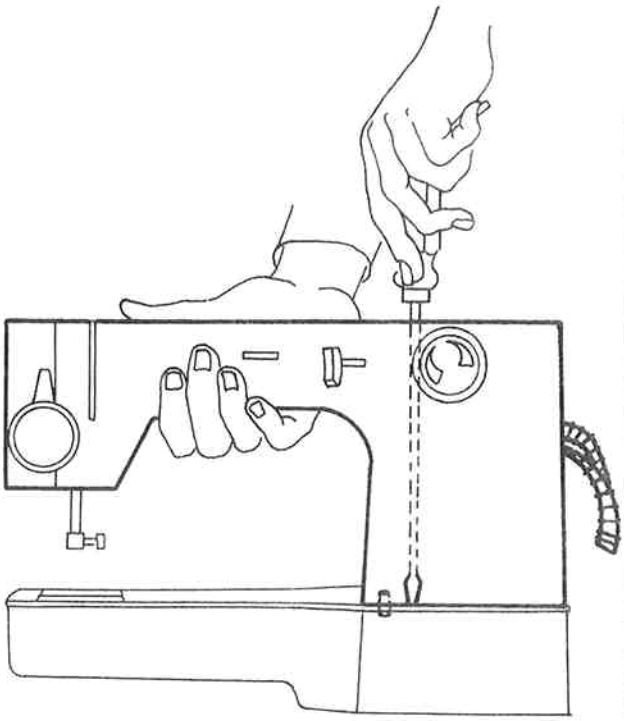
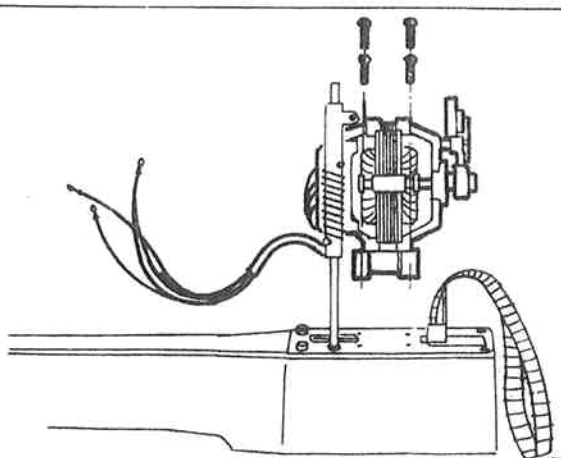
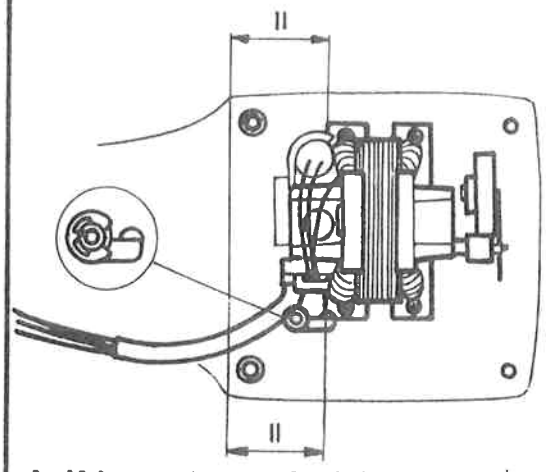


Remove upper casing straight upwards, i.e. without tilting.

6



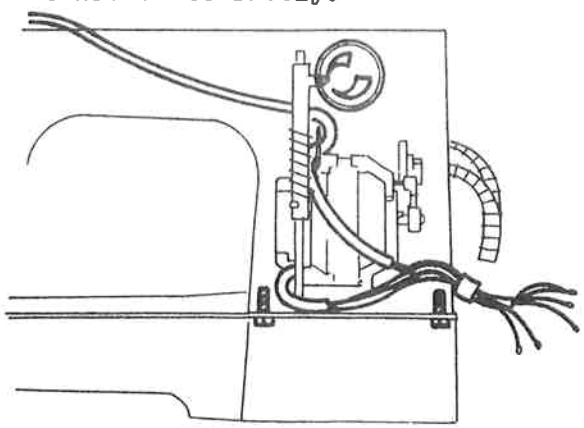
1



1. Align motor and tighten the 4 screws.
2. Check whether ends of feed control spring are held by the 2 catches and that it is under tension (catches opposite one another).
3. Maintain feed control lever in position as on encircled sketch by blocking mecanism near feed dog.

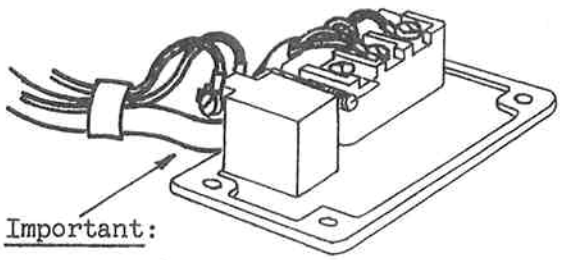
2

1. Turn stitch length knob as on sketch.
2. Slide on carefully upper casing (feed control shaft into bearing).
3. Slightly tighten the 4 casing assembly screws and check whether feed control shaft turns freely.



3

1. Fit the 2 insulating sleeves and connect switch plate (see wiring diagram).



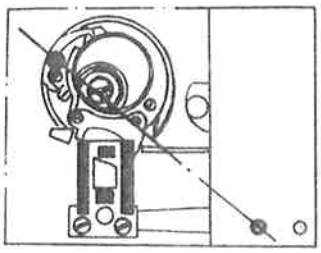
Important:

The switch plate sleeve must pass under the switch.

2. Screw on switch plate.

4

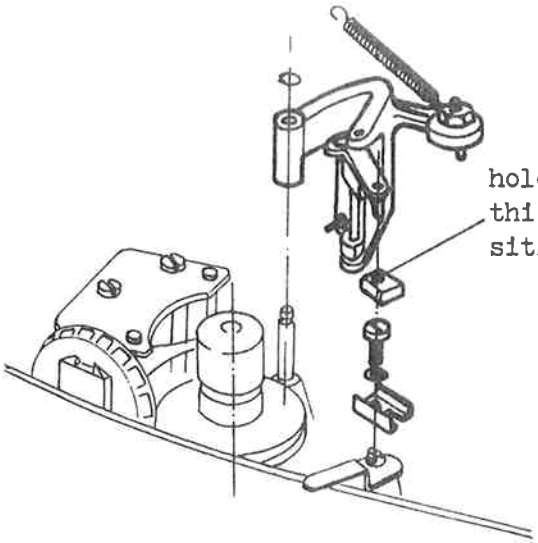
1. Put needle bar and feed dog at lowest position; point of hook as on sketch, then slide on belt without moving wheel nor pinion.



2. Check adjustments No. 7 and 11. If these are not correct, slide off belt and recommence as under 1.

5

1. Put on flywheel by turning it towards you and then secure it.
2. Make adjustment No. 1.
3. Refit base (3 screws).
4. Refit parts as on sketch below.



5. Check adjustments No. 4,5(6),14,15,16.

6

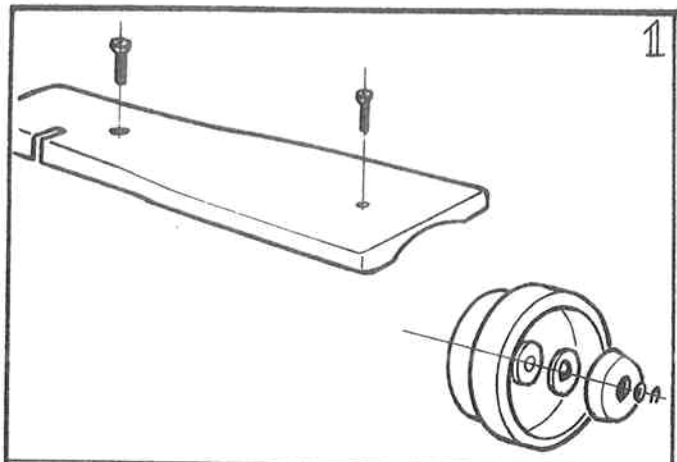
Refit upper cover.

Printed in Switzerland

December 1968

Repairs

1



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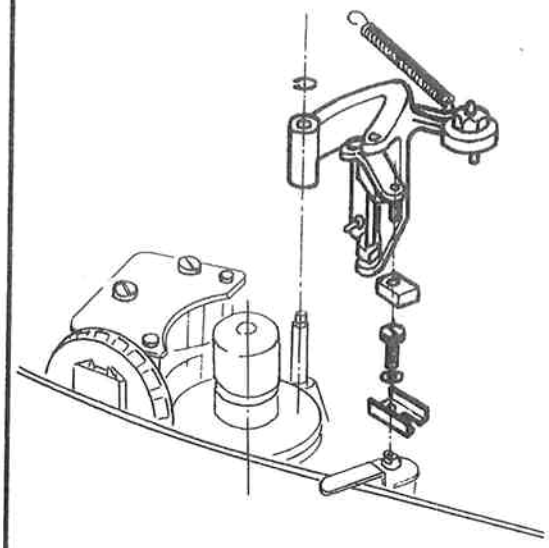

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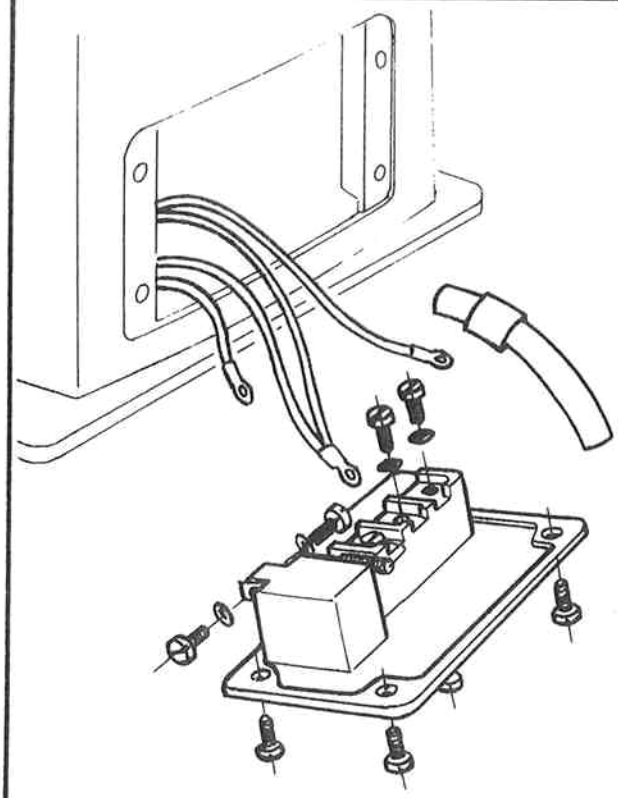
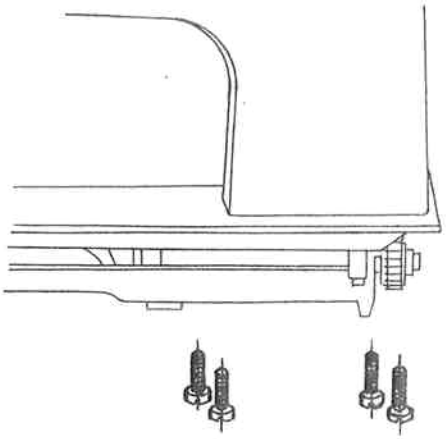


After having unscrewed the connection cables withdraw light cord completely.

4



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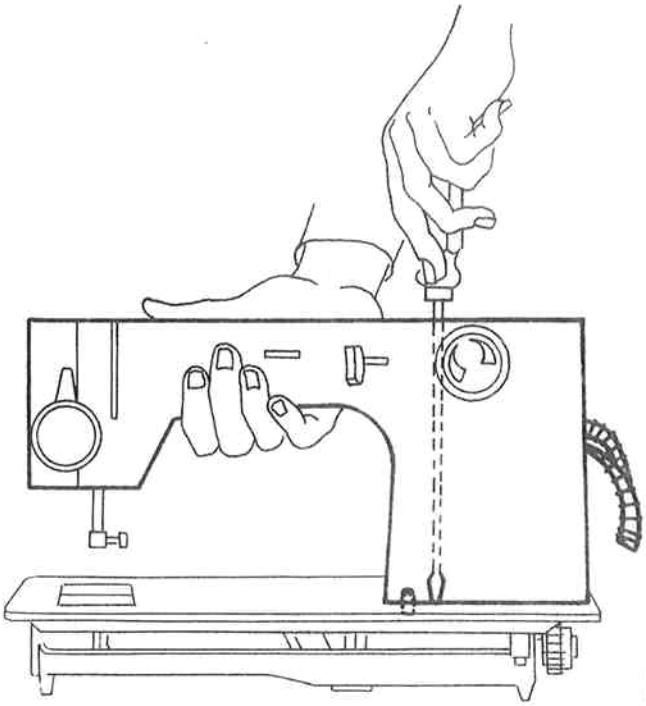
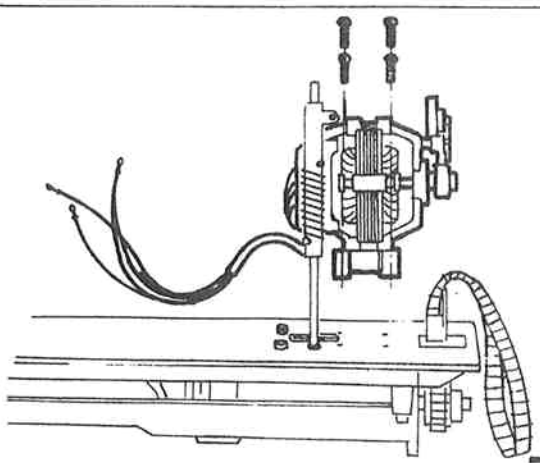


Remove upper casing straight upwards, i.e. without tilting.

6

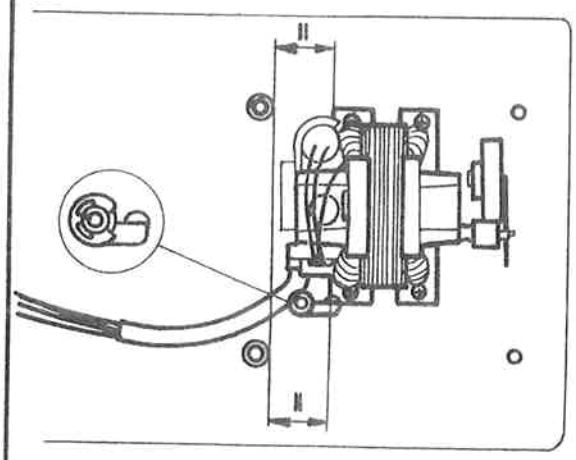


Printed in Switzerland

December 1968

repairs

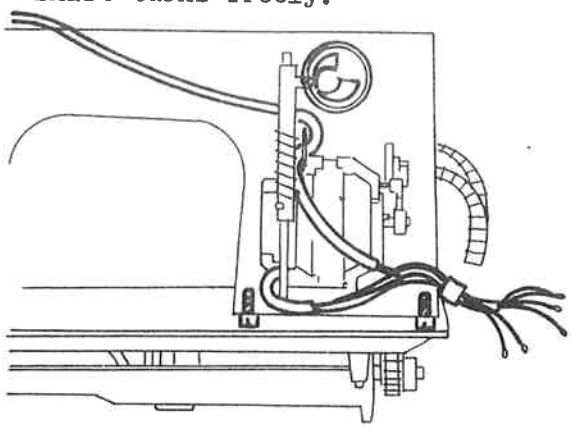
1



1. Align motor and tighten the 4 screws.
2. Check whether ends of feed control spring are held by the 2 catches and that it is under tension (catches opposite one another).
3. Maintain feed control lever in position as on encircled sketch by blocking mecanism near feed dog.

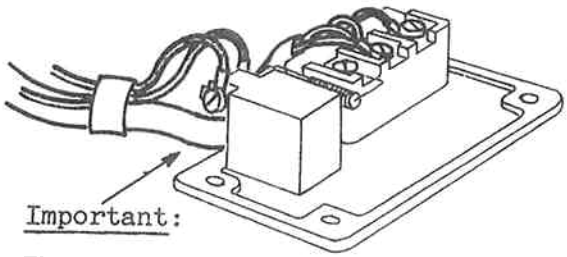
2

1. Turn stitch length knob as on sketch.
2. Slide on carefully upper casing (feed control shaft into bearing).
3. Slightly tighten the 4 casing assembly screws and check whether feed control shaft turns freely.



3

1. Fit the 2 insulating sleeves and connect switch plate (see wiring diagram).



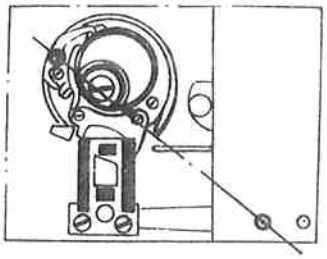
Important:

The switch plate sleeve must pass under the switch.

2. Screw on switch plate.

4

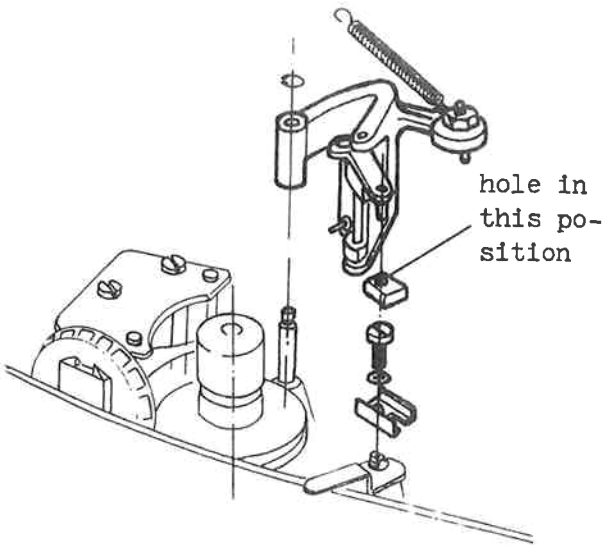
1. Put needle bar and feed dog at lowest position; point of hook as on sketch, then slide on belt without moving wheel nor pinion.



2. Check adjustments No. 7 and 11. If these are not correct, slide off belt and recommence as under 1.

5

1. Put on flywheel by turning it towards you and then secure it.
2. Make adjustment No. 2.
3. Refit parts as on sketch below.



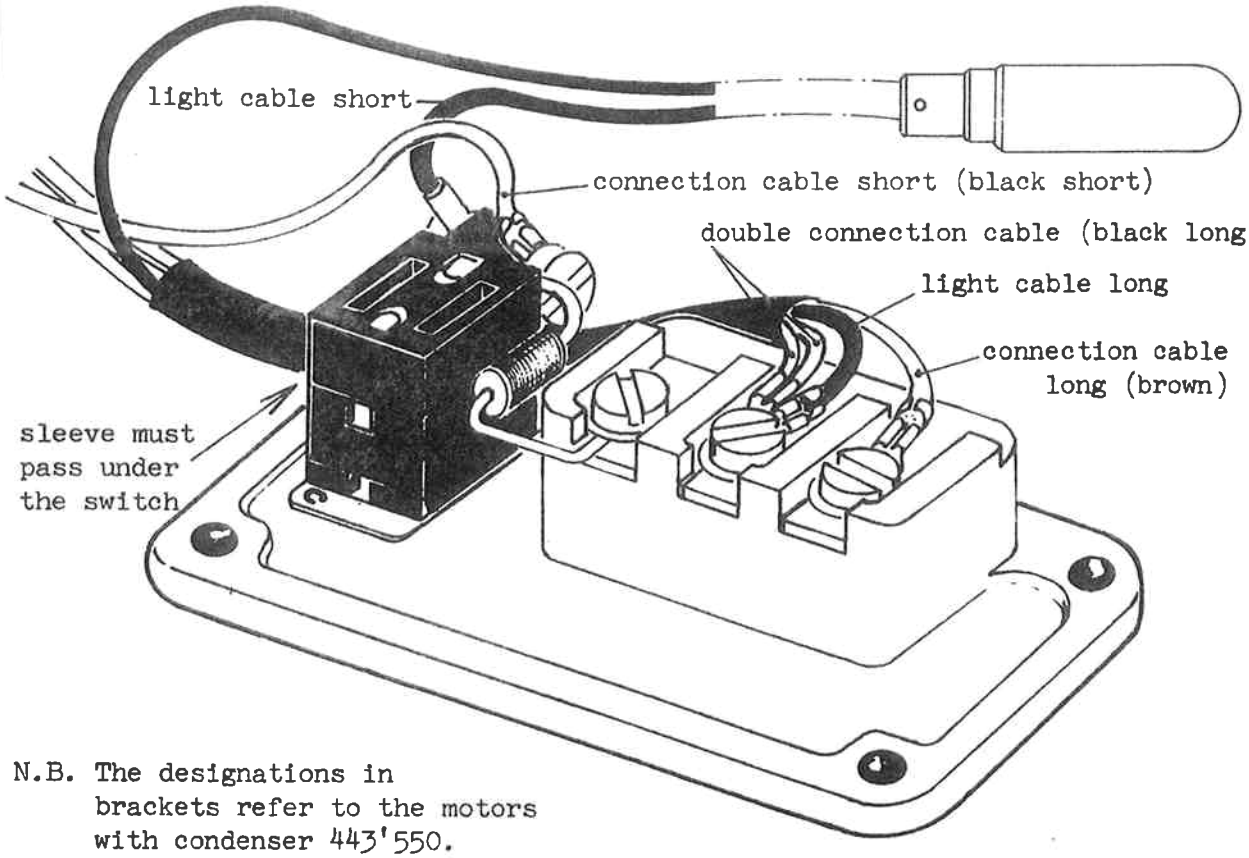
4. Check adjustments No. 4,5(6),14,15,16.

6

Refit upper cover.

SWITCH PLATE CONNECTIONS

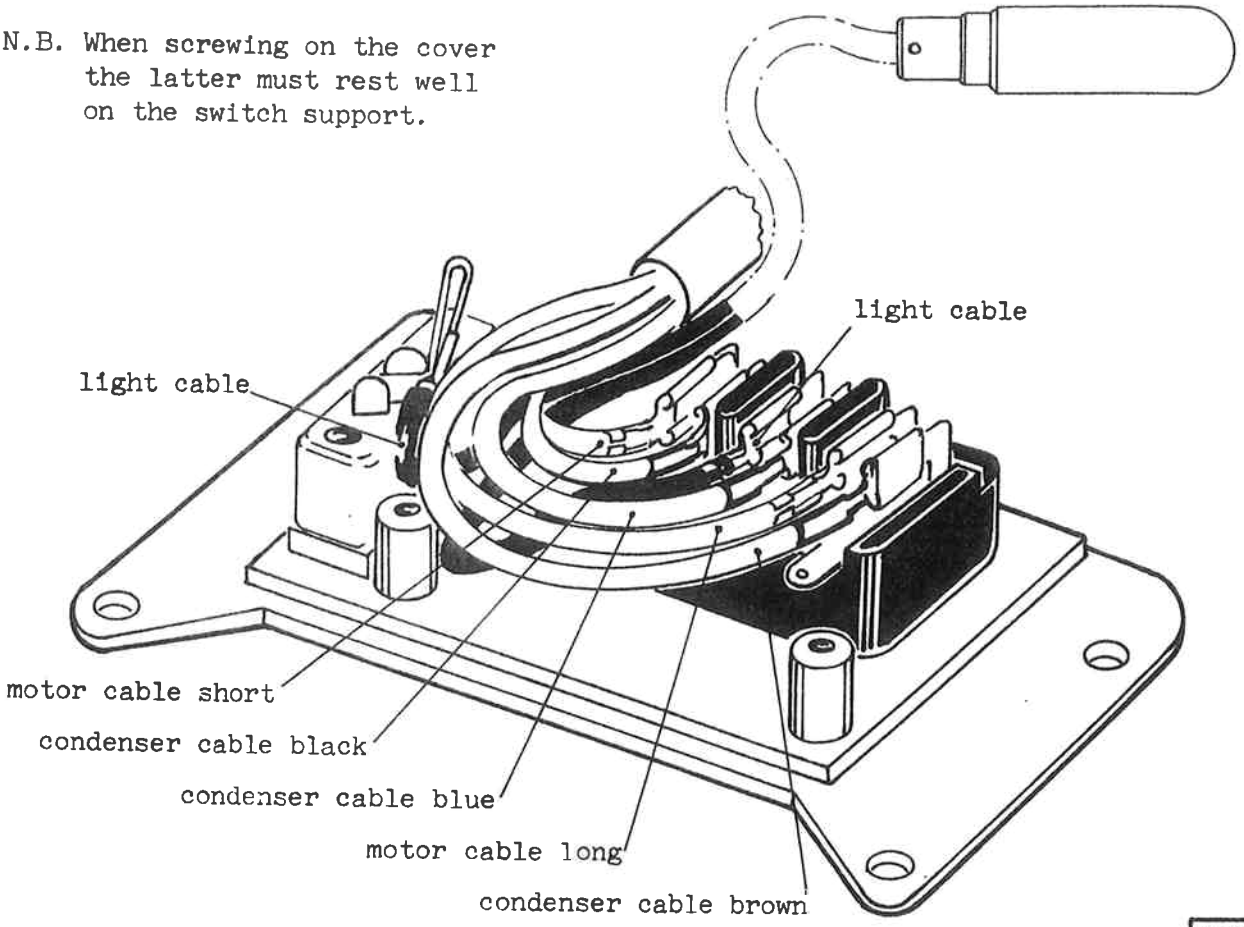
up to machine No. M 237'611


light cable short
connection cable short (black short)
double connection cable (black long)
light cable long
connection cable long (brown)
sleeve must pass under the switch

N.B. The designations in brackets refer to the motors with condenser 443'550.

as from machine No. M 237'612

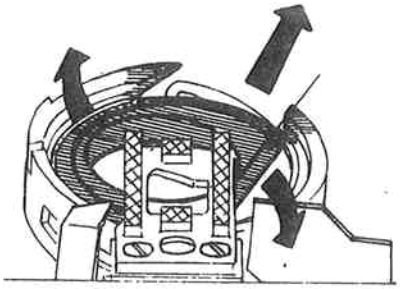
N.B. When screwing on the cover the latter must rest well on the switch support.



REPLACEMENT OF LOWER GUARD RING

DISMANTLING

1



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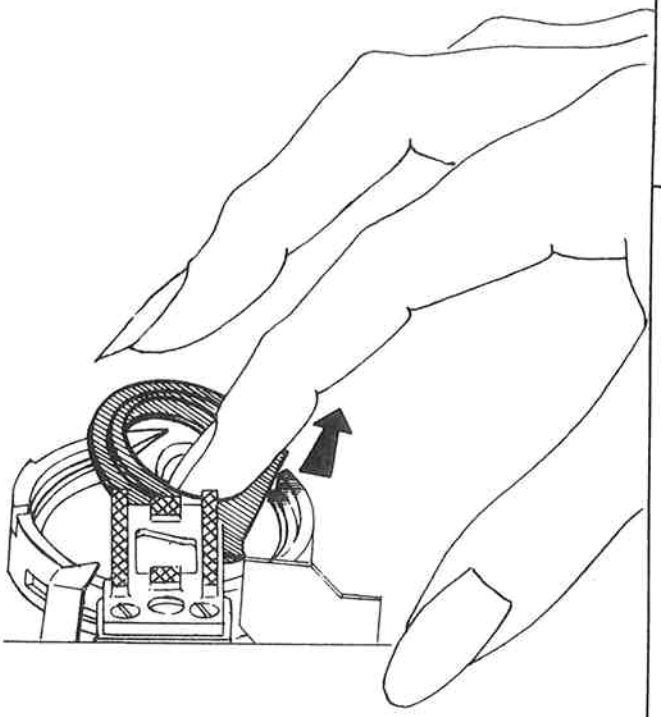
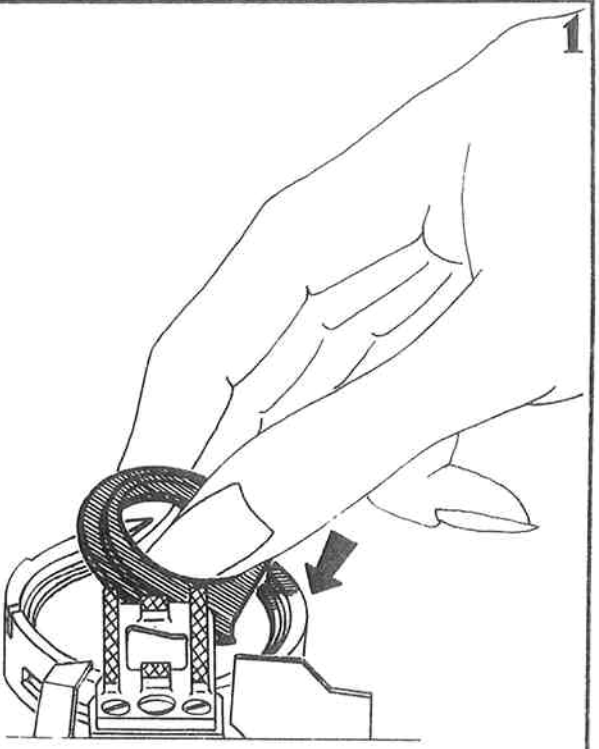


ASSEMBLY

1



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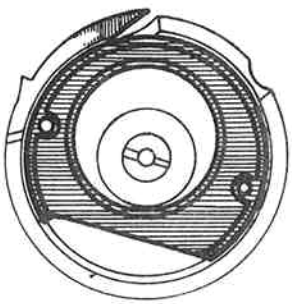

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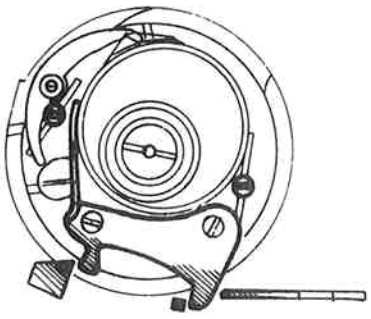
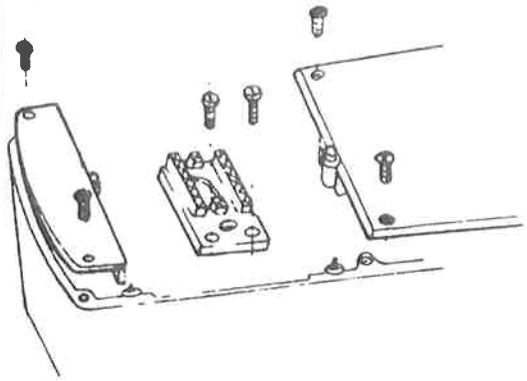


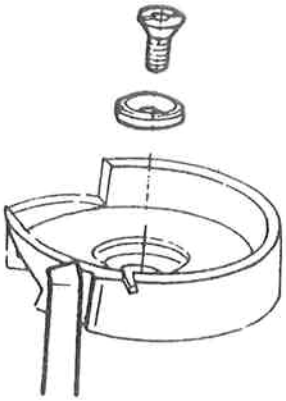
DISMANTLING

1



Support feed dog with screwdriver to unscrew.

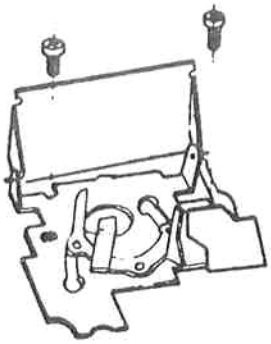
2



1. Remove upper- and lower guard rings (see page 1107).

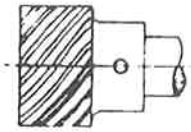
2. Place hook as on sketch and lift it by turning the flywheel backwards.

3



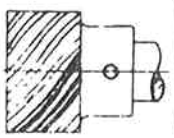
4

Before removing rotary hook pinion, note position of pinhole in relation to the teeth, in order to locate the timing position when re-assembling, i.e.: either



opposite a tooth

or



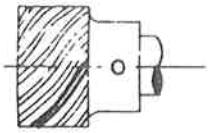
between two teeth

Do not turn flywheel anymore.

ASSEMBLY

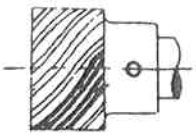
1

Fit pinion by taking into consideration the indications of dismantling, i.e.: either



opposite a tooth

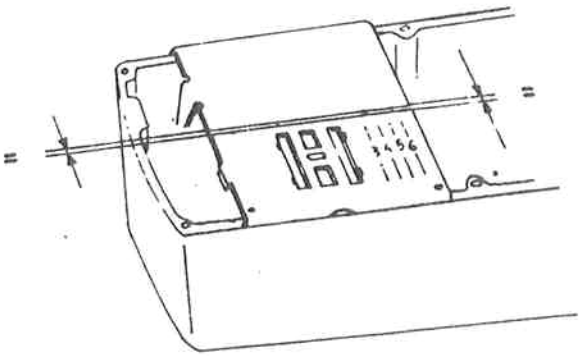
or



between two teeth

2

See adjustment No. 20, page 1156.

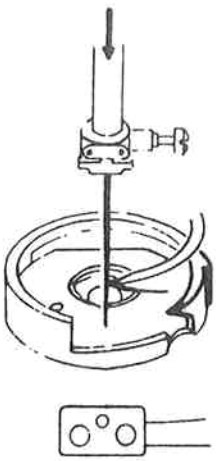


3

1. Place needle in centre of needle plate.

2. Place needle bar at lowest position.

3. Disengage thread release feeler and insert hook whilst maintaining its point exactly in centre of needle until the teeth touch those of the pinion. Then glide hook to the right and turn flywheel slowly in order to set the hook at its final position, i.e. point at "4 o'clock" when needle bar is at its lowest position.



4

1. Fit washer and oil hole screw.

2. Check hook timing (adjustment No. 7, page 1152).

3. Fit separating plate - and lower casing covers.

4. Fit feed dog and check adjustments No. 10 and 11, page 1153.

5. Fit lower- and upper guard rings (see page 1107).

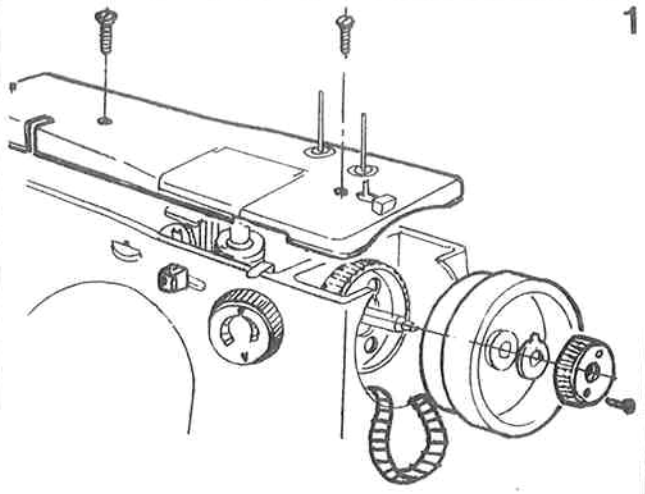
Printed in Switzerland
October 1971
Repairs

Printed in Switzerland

September 1975

Repairs

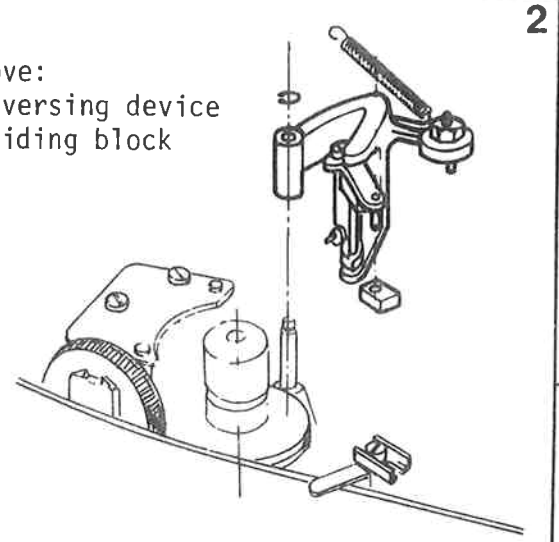
1



1. Remove:
   - Upper cover
   - Coupling knob and washer
   - Flywheel
2. Slide off belt from flange.

2

Remove:
- Reversing device
- Sliding block



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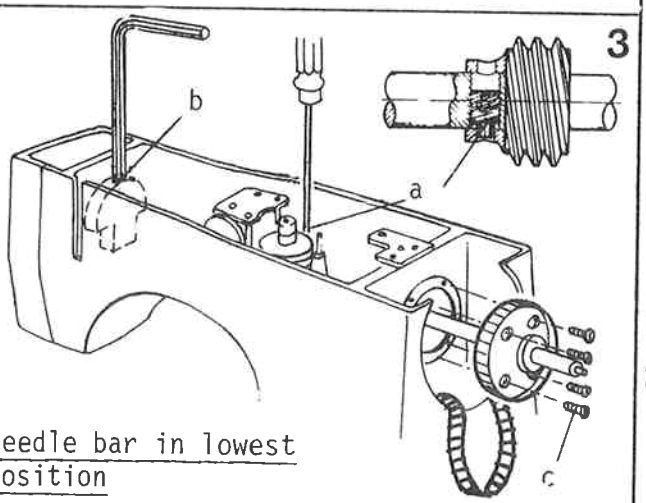
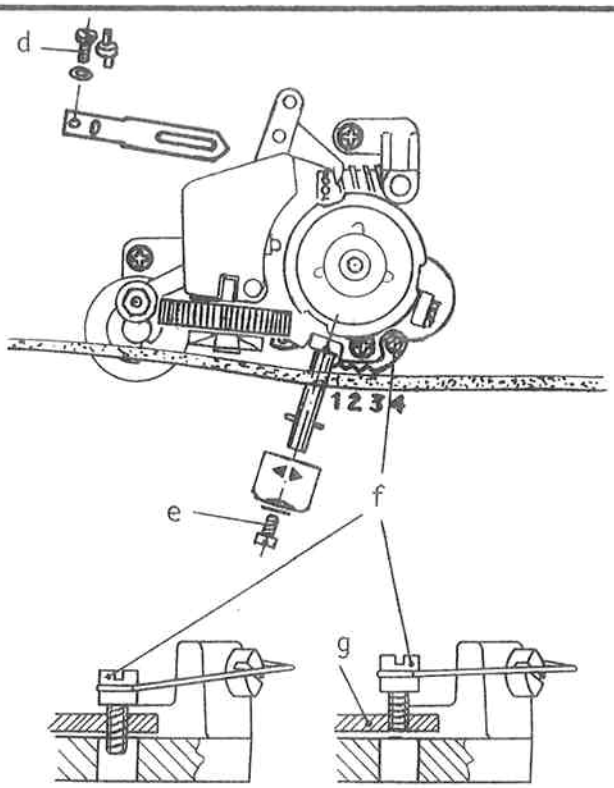


Needle bar in lowest position

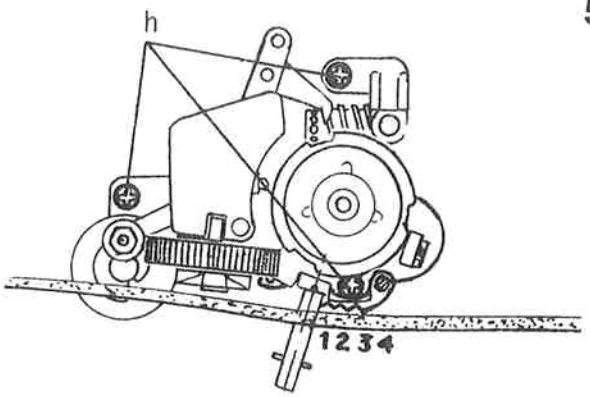
1. Loosen screw "a" until it butts, then screw it back one turn.
2. Unscrew and remove screw "b".
3. Remove the 4 screws "c" and pull out upper shaft.

4



1. Remove:
   - Cradle lever key (screw "d")
   - Stitch width knob (screw "e")
2. Free screw "f" from its hole in the Elnagraph base but do not remove it from stitch width selector "g".

5



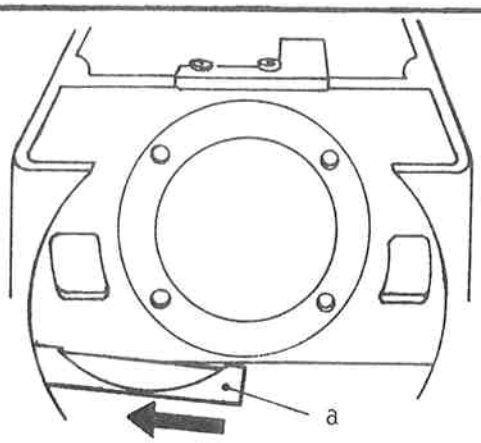
1. Unscrew and remove the 3 screws "h".
2. Wiggle and tilt Elnagraph towards you to take it out of the machine.

Printed in Switzerland

September 1975

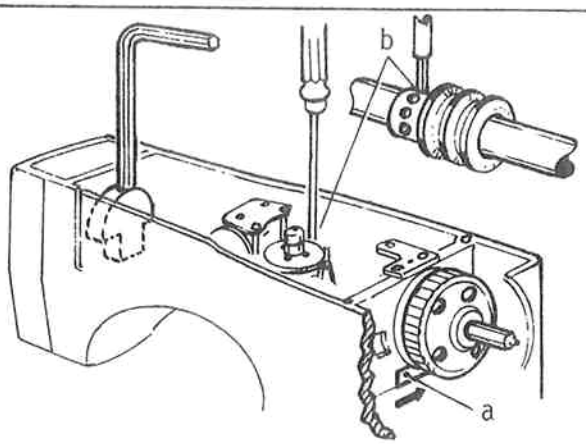
Repairs

1



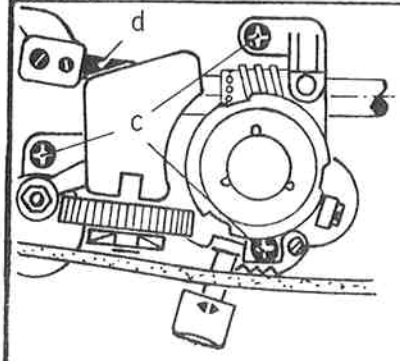
1.Place worm in the machine.
2.Install Elnagraph with guiding axle in hole of casing.
3.Slide casing insulation "a" to the side.
4.Before putting upper shaft into machine, check whether it is not damaged (burrs).

2



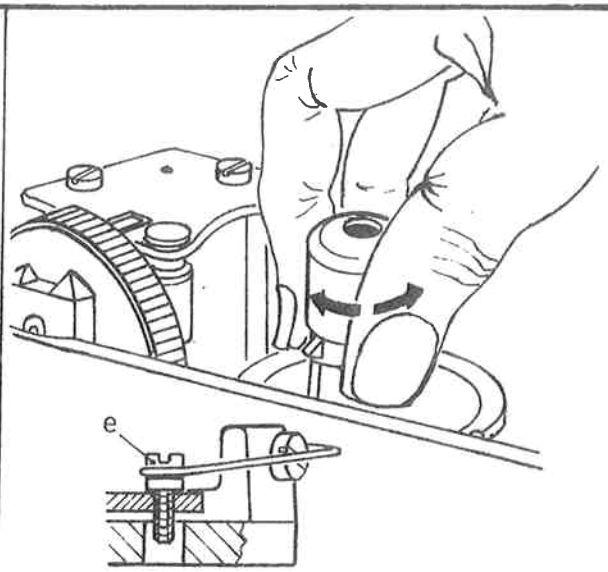
1.Tighten the 4 flange screws.
2.Slide insulation "a" into position.
3.Screw counterweight screw into hole of upper shaft.
4.Temporarily tighten worm screw "b" in any position.

3



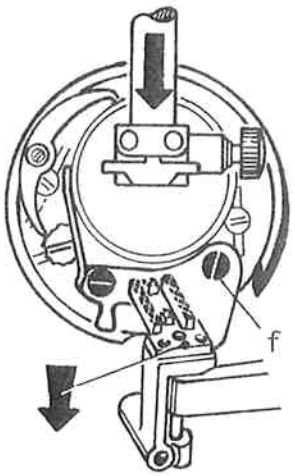
1.Refit the 3 screws "c" without tightening them.
2.Refit cradle lever key "d" (eccentric, washer).
3.Screw on stitch width knob (washer).

4



1.Adjust minimum play between worm and Elnagraph pinion. Tighten one Elnagraph base screw and check on a complete revolution that there is no bind.
2.Tighten the 3 screws.
3.Reset screw "e" in working position; spring must remain in groove of screw.

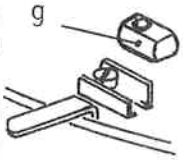
5



1.Hold needle bar in lowest position.
2.Stretch belt. By means of latter place feed dog in lowest position and bring point of hook opposite screw "f" (4 o'clock). Slide on belt in that position.
3.Reset needle bar in lowest position and recheck.

Check: Adjustments 7 and 11.

6

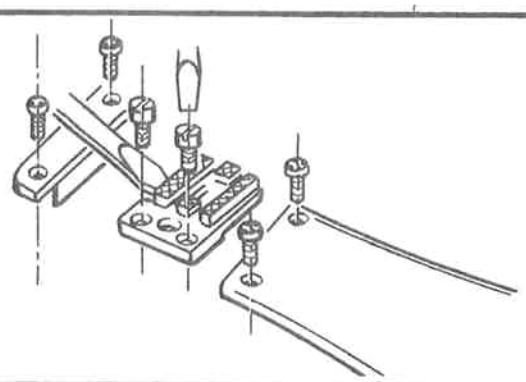


1.Fit flywheel, coupling washer and knob (adjustment).
2.Install sliding block "g" (see sketch), reversing device and lock spring.
3.Make adjustments 3, 4, 5, 14, 15 and 16.
4.Fit upper cover.

REPLACEMENT OF FEED LEVER - FREE ARM

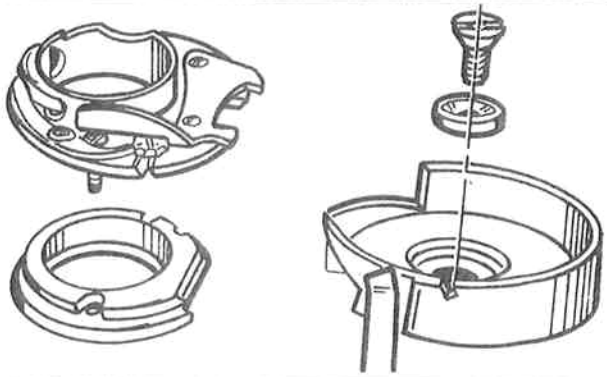
DISMANTLING

1



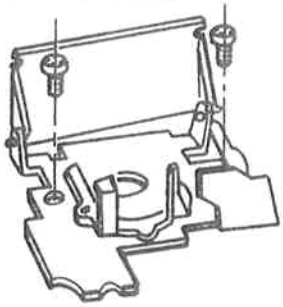
1. Remove lower casing cover and separating plate cover.
2. Support and unscrew feed dog.

2



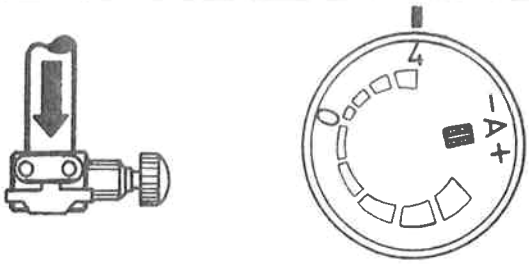
1. Remove upper and lower guard ring.
2. Place hook as on sketch and lift it by turning flywheel backwards.

3



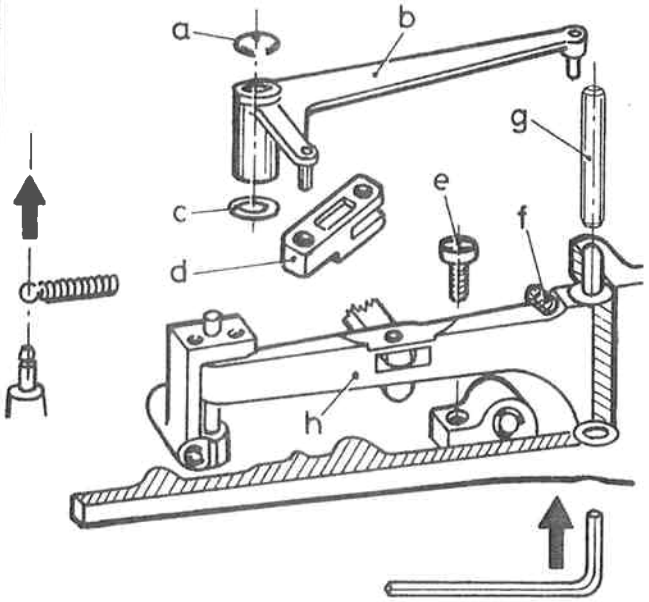
Remove separating plate.

4



1. Place stitch length knob on 4 reverse.
2. Place needle bar at lowest position.

5



1. Remove lock spring "a" and feed driving lever "b".
2. Re-place washer "c" on axle.
3. Remove oscillating rod "d".
4. Unscrew lifter bearing and take out Phillips screw "e".
5. Loosen allen screw "f" and remove feed lever axle "g" by pushing it from below free arm.
6. Disengage towards the left and remove complete feed lever "h".
7. Unhook feed spring.
8. Take out the 2 black washers.

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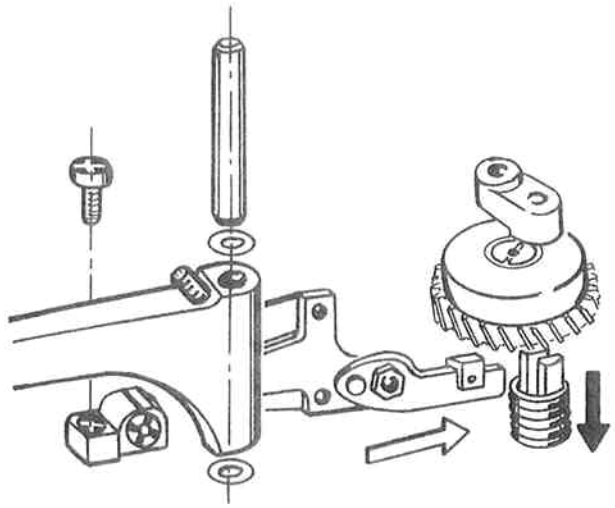
March 1977

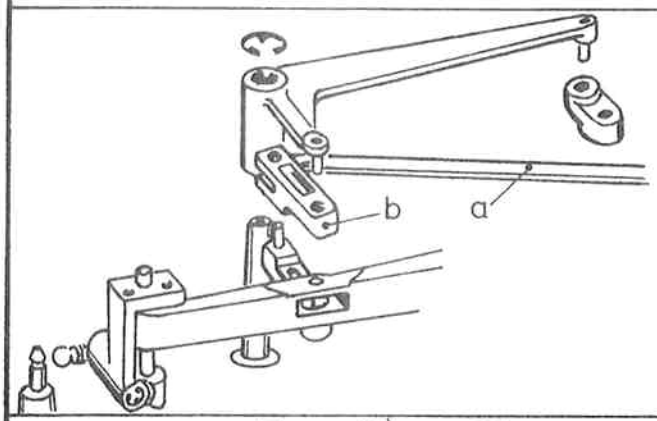
Repairs

1



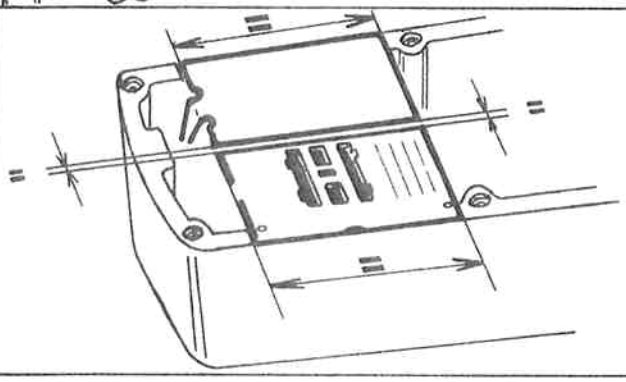
1. Fit complete lifter blade and feed spring on new feed lever.
2. Place complete feed lever and lifter blade inside free arm.
3. Check swinging action of feed link.
4. Press down pressure spring, engage lifter blade and feed lever.
5. Insert the 2 washers, bottom one first.
6. Refit feed lever axle (flush) and tighten allen screw.
7. Position and tighten lifter bearing.

2



1. Attach feed spring on groove of fixation pin.
2. Slide control rod "a" into oscillating rod "b" and refit both parts.
3. Carefully insert feed driving lever and refit lock spring.

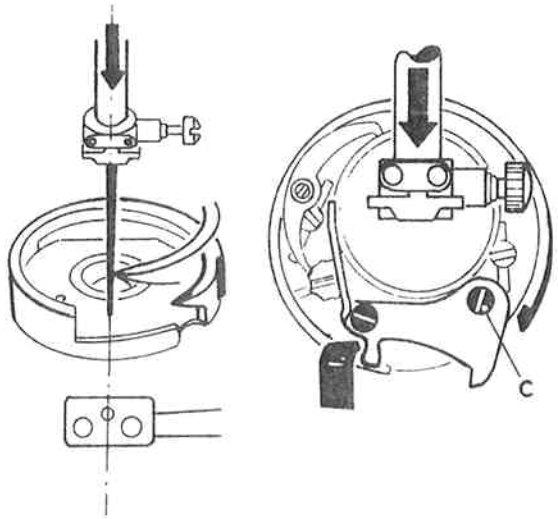
3



Refit separating plate (rotary hook cover parallel to needle plate).

See also adjustment 20, page 1156.

4



1. Place needle in centre of needle plate.
2. Place needle bar at lowest position.
3. Disengage thread release feeler and insert hook whilst maintaining its point exactly behind needle until theeth touch those of pinion. Then glide hook to the right and turn flywheel slowly in order to set hook at its final position, i.e. point at "4 o'clock" (opposite screw "c") when needle bar is at lowest position.
4. Refit washer and oil hole screw.
5. Refit lower casing cover and separating plate cover.
6. Refit lower and upper guard ring.
7. Fit and adjust feed dog (see adjustment 10, page 1153).
8. Make sewing test.

REPLACEMENT OF FEED LEVER - FLAT BED

DISMANTLING

1

1. Remove upper cover and flywheel.
2. Take off needle plate and open rotary hook cover.

2

1. Place stitch length knob on 4 reverse.
2. Place needle bar at lowest position.
3. Slide off belt.

3

1. Lay down machine.
2. Remove lock spring and disengage control rod from feed control shaft.
3. Unscrew and remove lower casing (3 screws).

4

1. Remove lock spring and feed driving lever.
2. Re-place washer on axle.
3. Remove control rod and oscillating rod.
4. Unscrew lifter bearing and take out Phillips screw.
5. Disengage complete feed lever together with lifter blade. Do not unscrew feed gear.
6. Re-place bottom washer on axle.
7. Unhook feed spring on the left hand side.
8. Unscrew feed dog.

ASSEMBLY

1

1. Fit complete lifter blade and feed spring on new feed lever.
2. Press down pressure spring, engage lifter blade and feed lever.
3. Check swinging action of feed link.
4. Position and tighten lifter bearing.
5. Attach feed spring on groove of fixation pin.

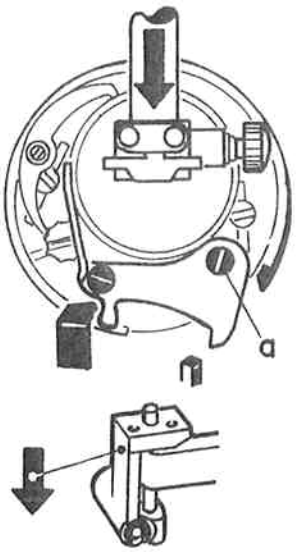
2

1. Slide control rod - large diameter of eyelets downwards - into oscillating rod and refit both parts.
2. Carefully insert feed driving lever and refit lock spring.

3

1. Place second washer on feed lever axle and engage lower casing on machine.
2. Slightly tighten the 3 screws.
3. Engage control rod on feed control shaft and refit lock spring.

4



1. Hold needle bar at lowest position.
2. Stretch belt. By means of latter place feed dog carrier at lowest position and bring point of hook opposite screw "a" (4 o'clock). Slide on belt in that position.
3. Reset needle bar at lowest position and recheck.
4. Check adjustments 7 and 11, pages 1152 and 1153.

5

1. Refit flywheel and upper cover.
2. Adjust needle clearance by moving lower casing in relation to upper casing (see adjustment 2, page 1151).
3. Firmly tighten the 3 screws.
4. Fit and adjust feed dog (see adjustment 10, page 1153).
5. Make sewing test.

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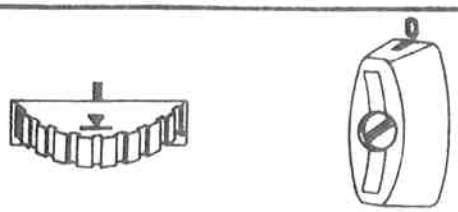
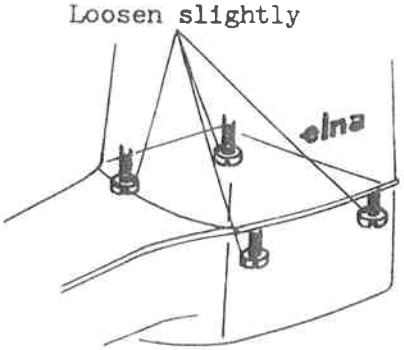
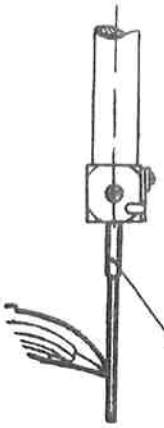
March 1977
Repairs

NEEDLE CLEARANCE - FREE ARM 1



Loosen slightly



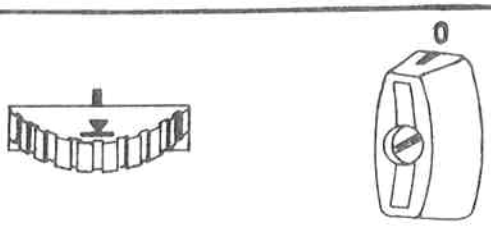


Adjust clearance by moving upper casing in relation to lower casing.
Tighten the 4 screws.

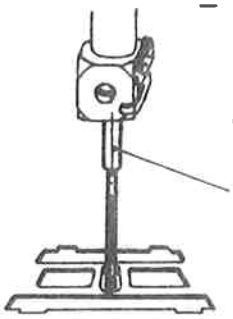
Tolerance:
Clearance or bending of gauge: 0,05 mm (.002").

Gauge 11'001 (607'801)

NEEDLE CLEARANCE - FLAT BED 2

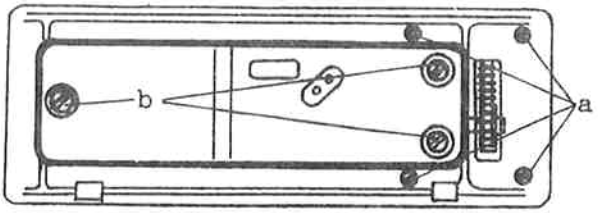


1. Slightly loosen the 4 assembly screws "a". Centre gauge in needle plate hole.
Tighten the 4 screws.

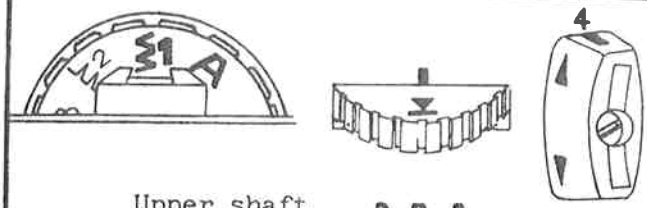


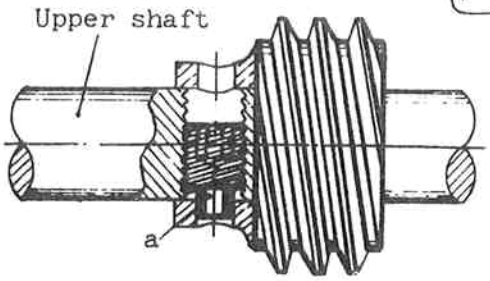
Gauge 11'001 (607'801)

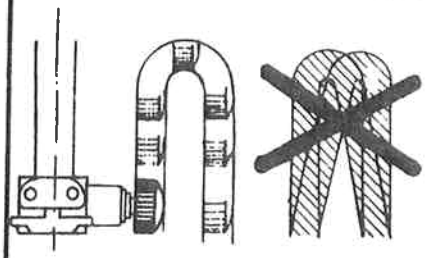
2. Slightly loosen the 3 screws "b". Adjust clearance as per ADJUSTMENT No. 1.
Tighten the 3 screws.



ELNA-DISC DRIVE (except 11 13) 3

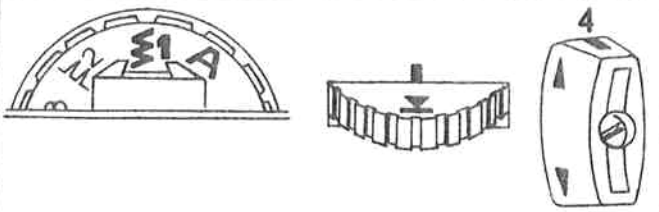


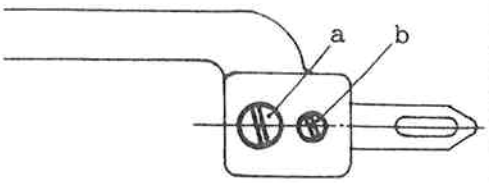




Run machine at full speed and observe needle clamping screw, which must describe an arc.
In order to obtain a correct adjustment, free screw "a" and change the position of the worm (12 holes). Tighten "a".

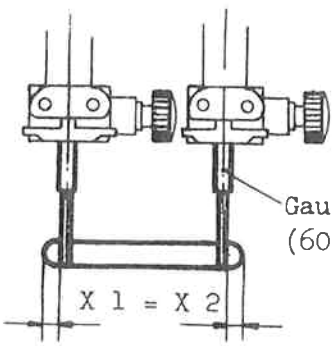
NEEDLE BAR SWING (except 11 13) 4





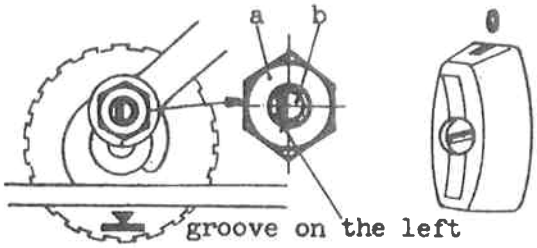
Slightly loosen screw "a" and adjust "b" to obtain the swing: X 1 = X 2

Tighten "a".



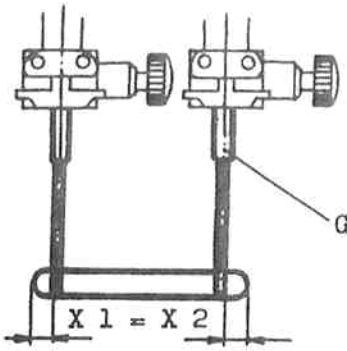
Gauge 11'001 (607'801)

CENTERING (except 11 13) — 5



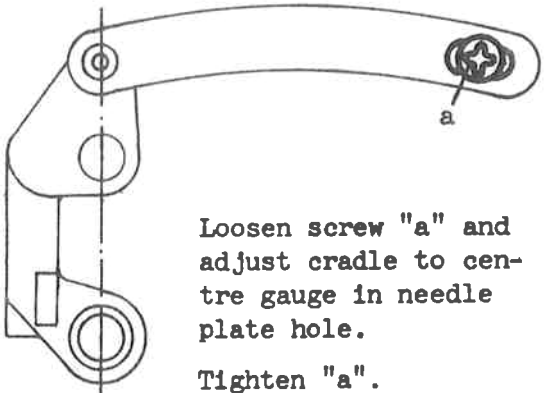
Slightly loosen nut "a" and adjust "b" to obtain the centering: X 1 = X 2

Tighten nut "a" whilst retaining eccentric "b".



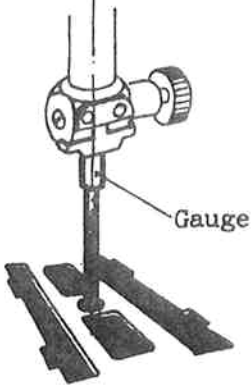
Gauge 11'001 (607'801)

CENTERING 11 13 — 6



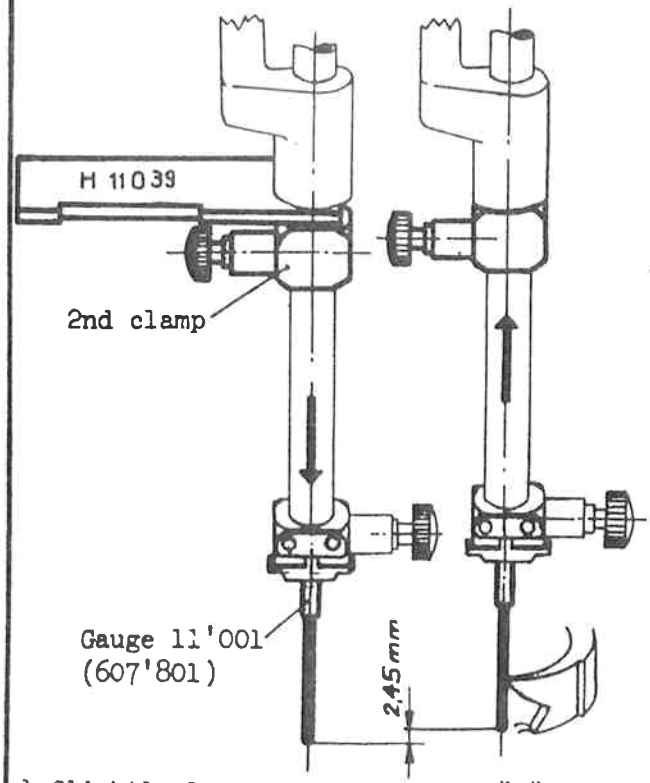
Loosen screw "a" and adjust cradle to centre gauge in needle plate hole.

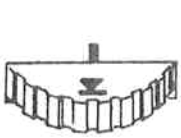
Tighten "a".



Gauge 11'001(607'801)

HOOK TIMING — 7



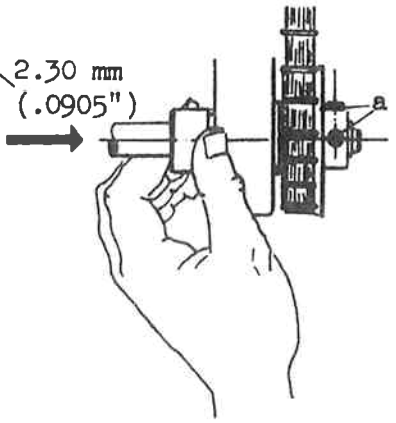


Tolerance:

2.60 mm (.1023")

2.45 mm (.0964")

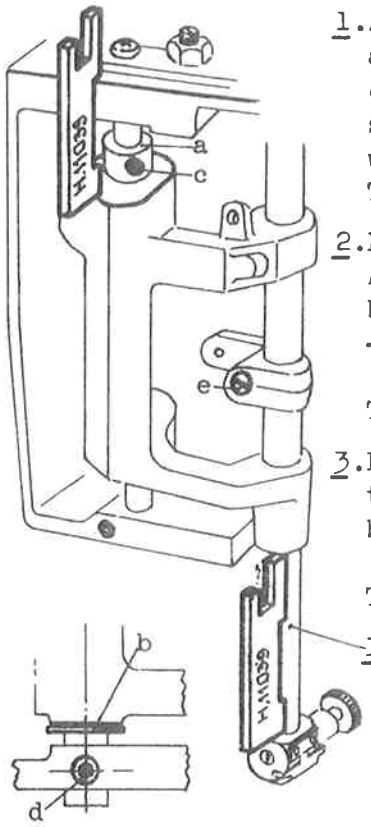
2.30 mm (.0905")



1. Slightly loosen the 2 screws "a". Place needle bar at its lowest position, insert gauge and press 2nd clamp against the latter; tighten needle clamping screw.
2. Remove gauge and turn flywheel towards you until 2nd clamp touches the cradle.
3. Place point of hook behind the centre of the gauge 11'001 by turning lower shaft in the working direction, whilst pressing in direction of the arrow.
4. Eliminate axial play with driving pinion and tighten the 2 screws "a". Check for free running - without play nor hard points.

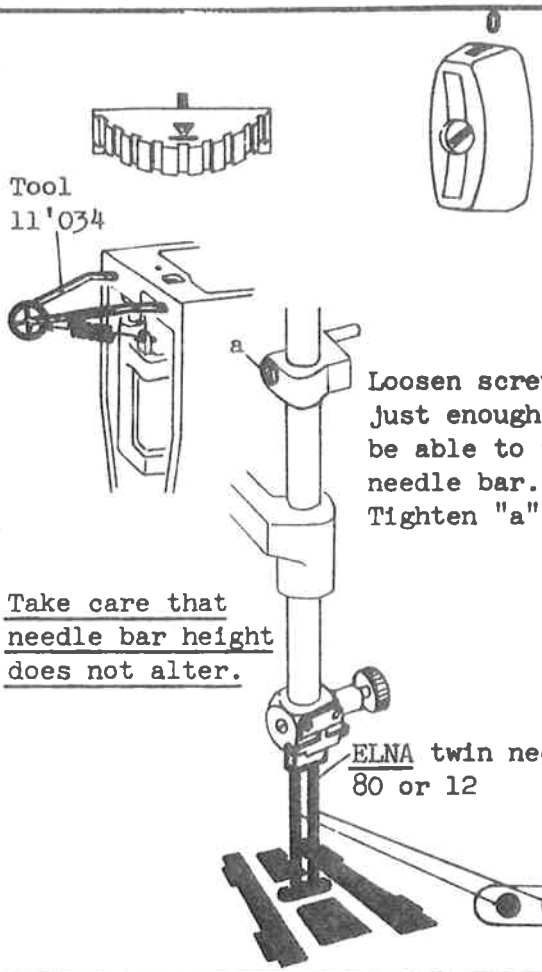
CHECK ADJUSTMENT NO. 11

HEIGHT OF CRADLE AND NEEDLE BAR 8



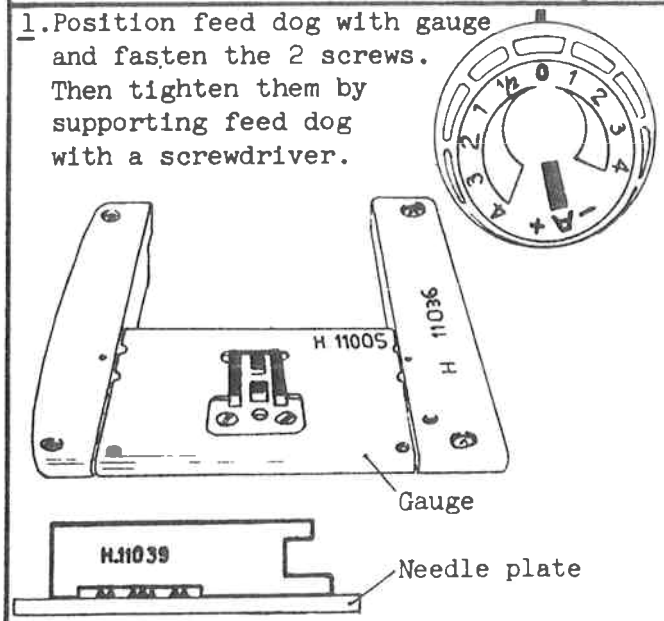
1. Adjust slight axial play of cradle between stop "a" and washer/clip "b". Tighten "c".
2. Loosen screw "d". Adjust cradle height (26 mm -1.03") by lifting cradle axle. Tighten "d".
3. Loosen screw "e" to adjust needle bar height (45 mm - 1.77"). Tighten "e".

ORIENTATION OF NEEDLE BAR 9


Tool
11'034
a
Loosen screw "a" just enough to be able to turn needle bar. Tighten "a".
Take care that needle bar height does not alter.
ELNA twin needle
80 or 12

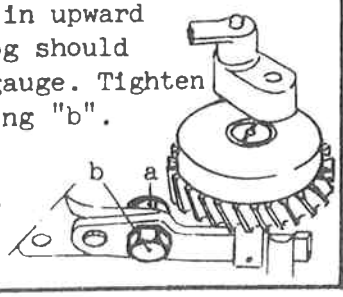
FEED DOG 10

1. Position feed dog with gauge and fasten the 2 screws. Then tighten them by supporting feed dog with a screwdriver.

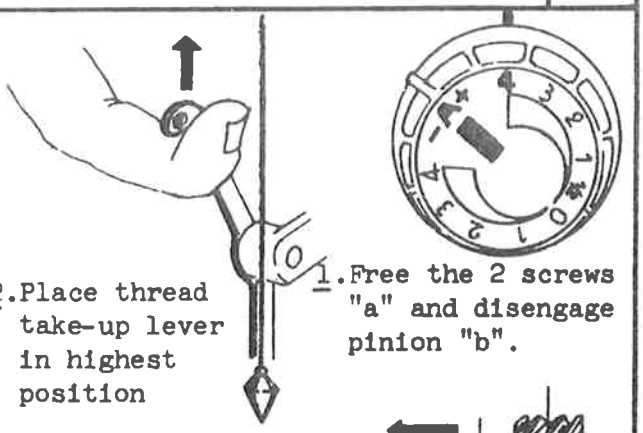


2. Loosen nut "a" and adjust feed dog height (1.15mm-.045") by turning screw "b" in upward direction. Feed dog should barely touch the gauge. Tighten "a" whilst retaining "b".

Feed dog must not touch needle plate on 4 FWD. and 4 REV.

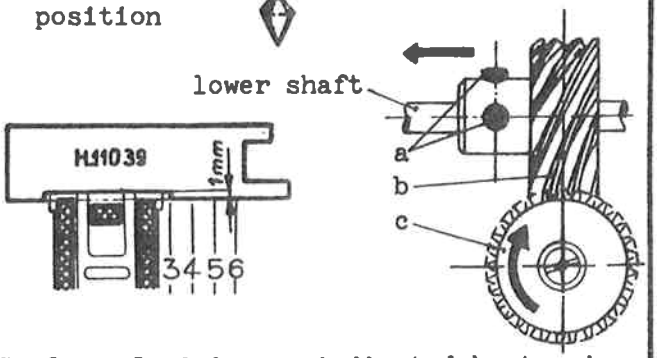


FEED TIMING 11



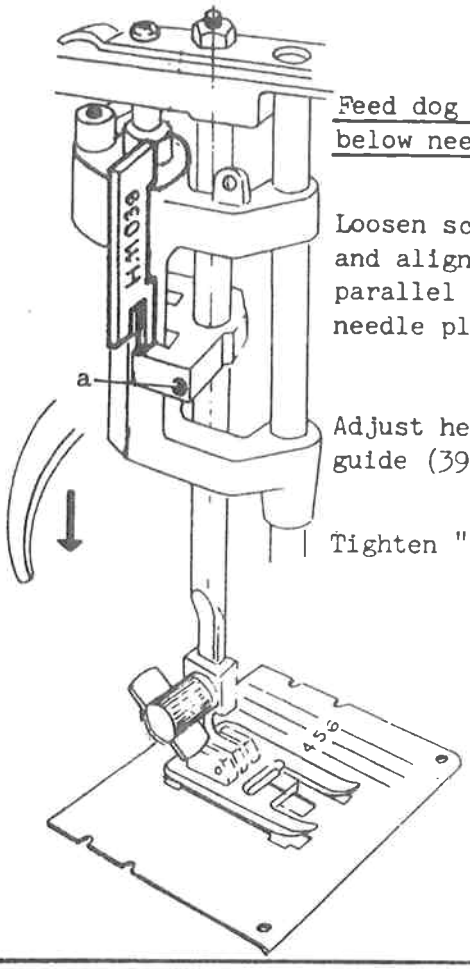
2. Place thread take-up lever in highest position

1. Free the 2 screws "a" and disengage pinion "b".



3. Place feed dog as indicated by turning feed gear "c" in direction of arrow. Engage pinion and align it to centre of feed gear. Tighten the 2 screws "a".
Check: When thread take-up lever starts to descend, feed dog should continue to advance 1 mm (.04") further.

PRESSER BAR 12



Feed dog must be below needle plate.

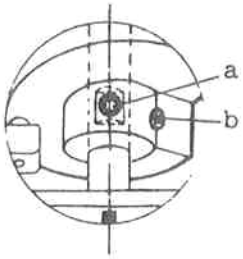
Loosen screw "a" and align foot parallel to needle plate.

Adjust height of guide (39 mm -1.54")

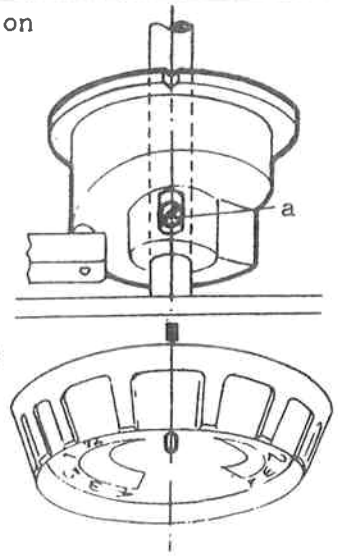
Tighten "a".

STITCH LENGTH 13

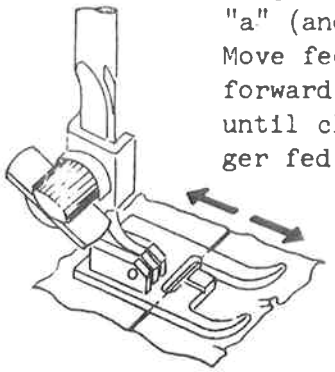
Previous execution



Observe that screw "a" sits on the flat of the axle.

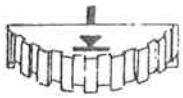


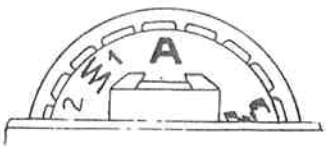
Slightly loosen screw(s) "a" (and "b").
Move feed control cam forward or backward until cloth is no longer fed at "0".

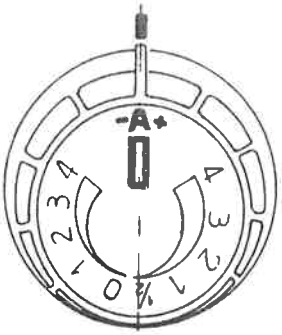


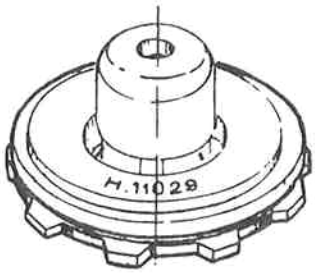
Tighten "a" (then "b").

AUTOMATIC FEED 62 64 14

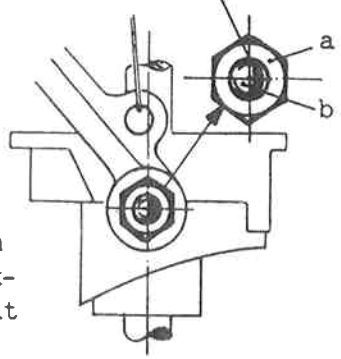


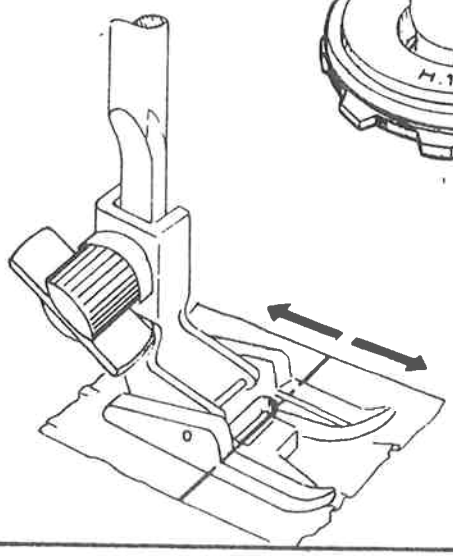






groove on the right



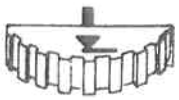


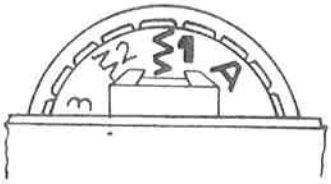
Slightly loosen nut "a" and adjust "b" to obtain neither forward nor backward feed of the cloth at "A".
Tighten "a".

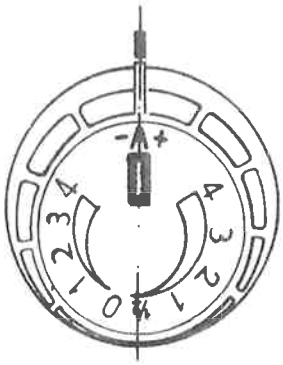
Advance at + and return at − must be practically equal.

AUTOMATIC BUTTONHOLE FEED 62 64 — 15

No double disc in machine







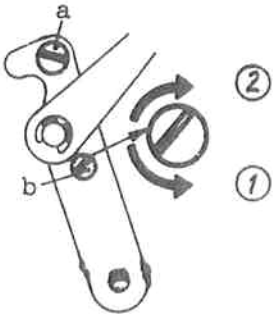
Preparation of machine:

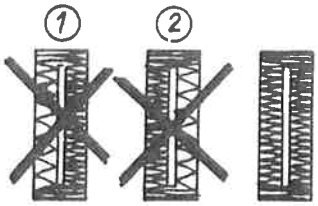
see instruction book

Sew an automatic buttonhole

Slightly free screw "a" and adjust "b" to obtain the same density of stitches forward and reverse.

Tighten "a".

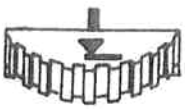


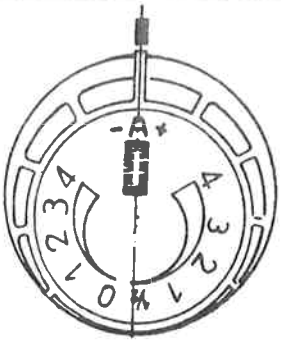


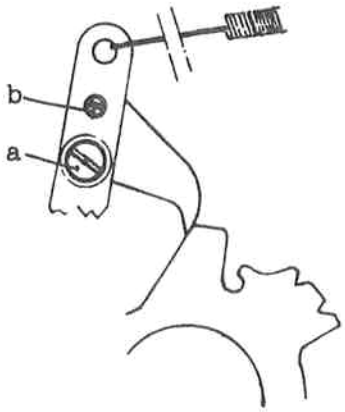
Always adjust on the first row.

AUTOMATIC BUTTONHOLE SPACING 62 64 — 16

No double disc in machine







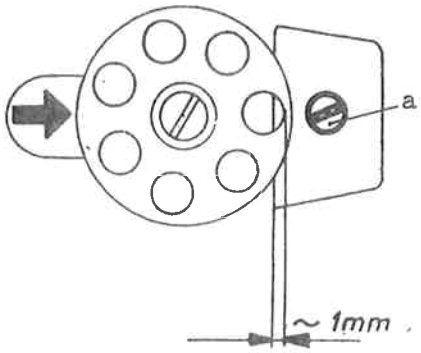
Place stitch width knob on "4" and needle bar on the right hand side; with point of needle at height of needle plate.

Slightly free screw "a" and turn "b" until no longer any lateral movement of needle bar is observed when stitch width knob is pushed from "4" to "2" and back to "4". Tighten "a" and recheck.

Make sample buttonholes and readjust "b" if no satisfactory cutting space is obtained.

BOBBIN WINDING 17

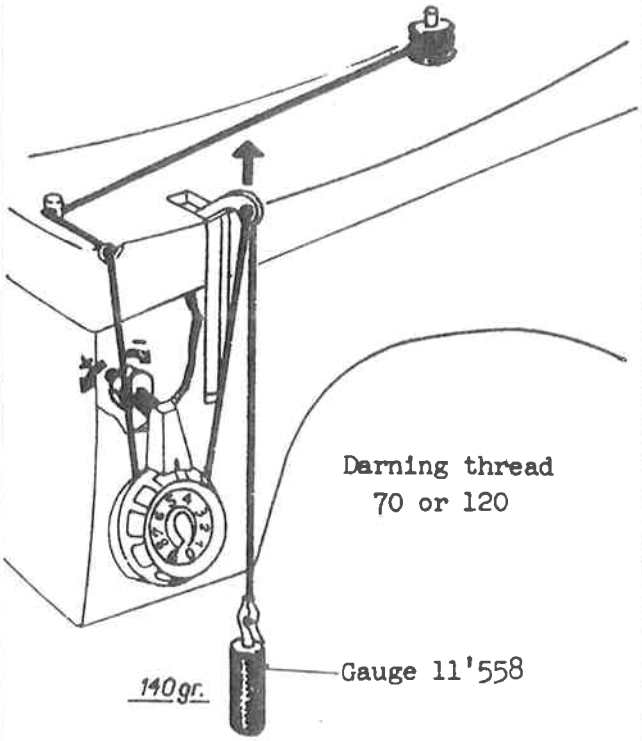
Loosen coupling knob half a turn



Loosen screw "a" to obtain an overlap of about 1 mm (.04").

Tighten "a".

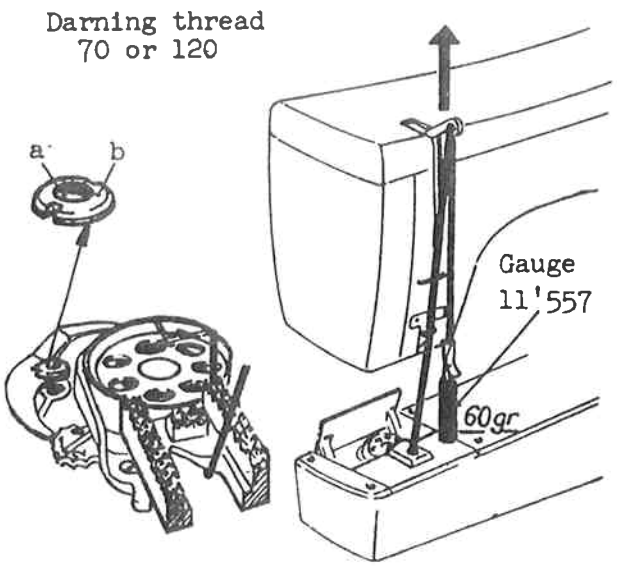
UPPER TENSION 18



Tension at 4 : falls slowly
Tension at $4\frac{1}{2}$: stops

Turn nut:
to the left - to increase the tension
to the right - to decrease the tension

LOWER TENSION 19



Tension at $\frac{3}{4}$: falls slowly
Tension at 1 : stops

Slightly loosen screw "a" and adjust "b" to increase or decrease the tension.

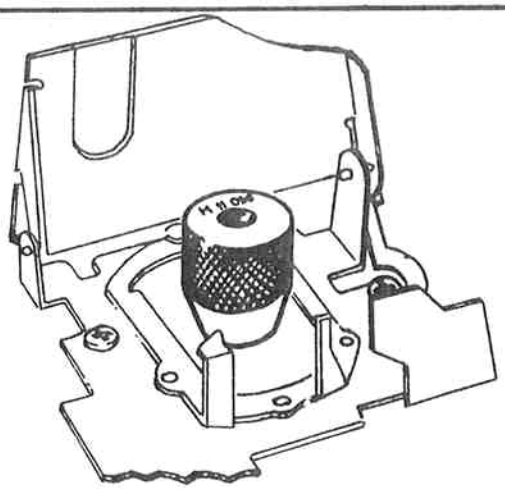
increase

decrease

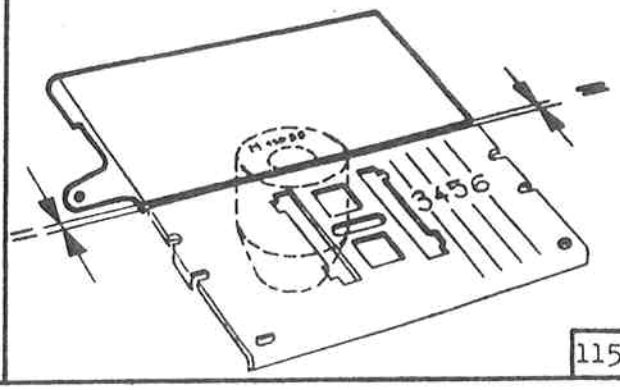
Tighten "a".

Use special screwdriver 11'035.

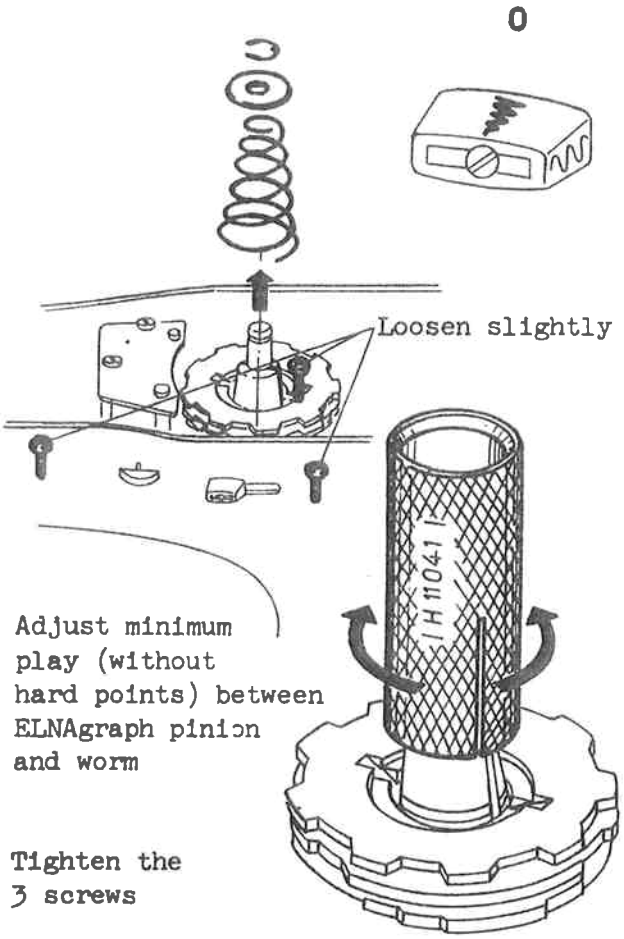
CENTERING OF SEPARATING PLATE 20



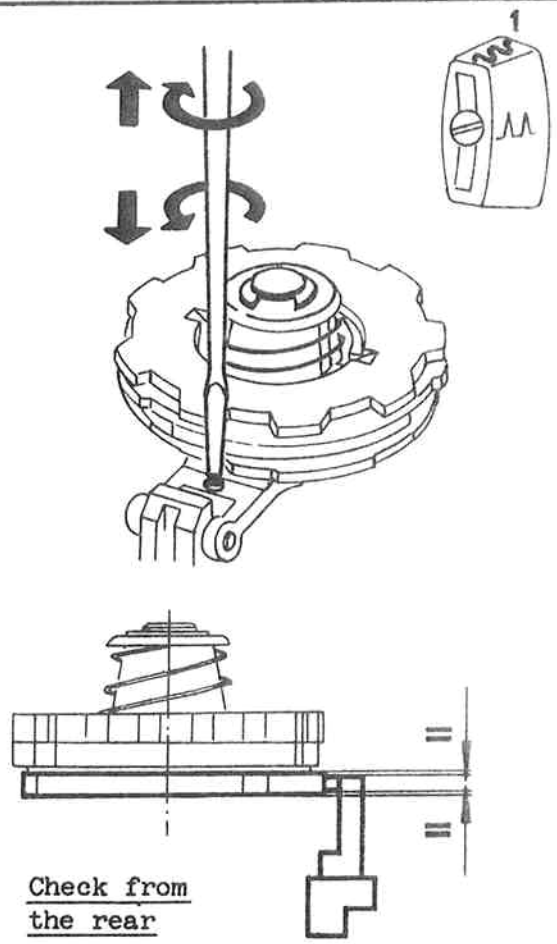
Centre separating plate with gauge and align rotary hook cover to needle plate.



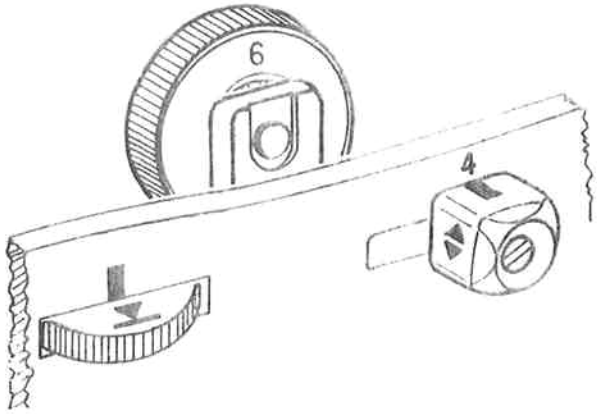
PLAY OF ELNAGRAPH PINION 31 33 — 21

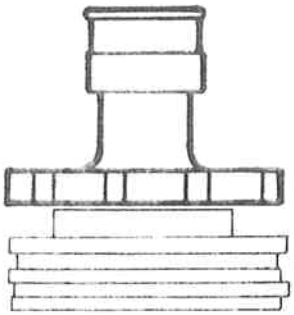


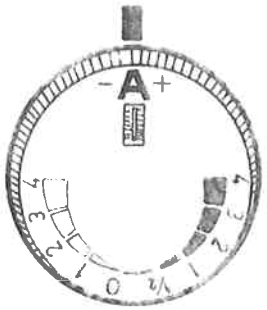
HEIGHT OF BLOCK OF CAMS 31 33 — 22

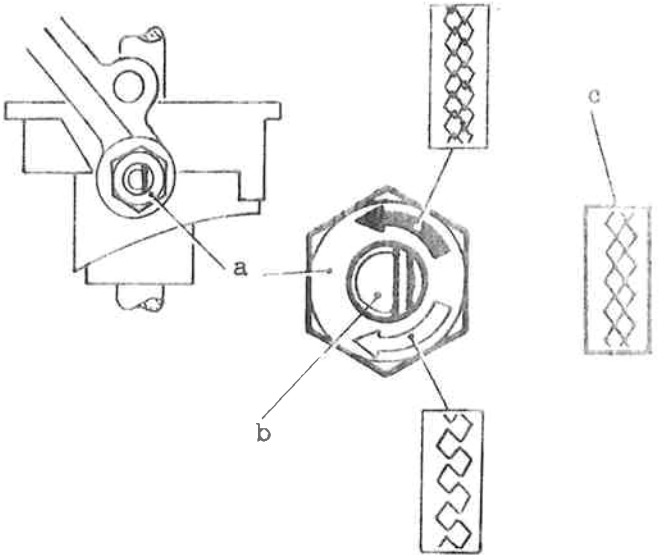


AUTOMATIC FEED 72 74





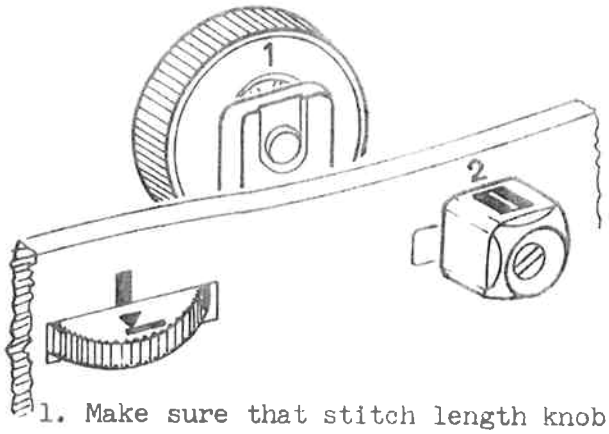


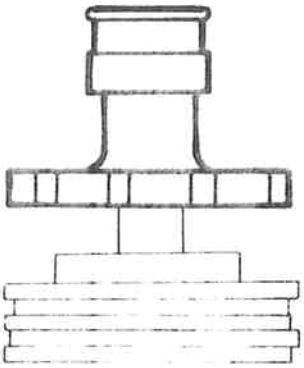


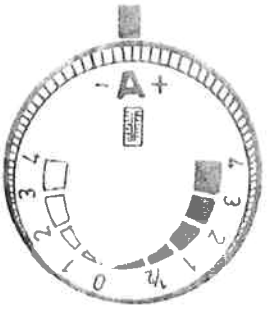
1. Make sure that stitch length knob is set in the notch and sew a sample with presser foot.
2. Slightly loosen nut "a" and adjust eccentric "b" (slot on the right) to obtain a feed that corresponds to sketch "c".
3. Tighten "a" whilst retaining "b".

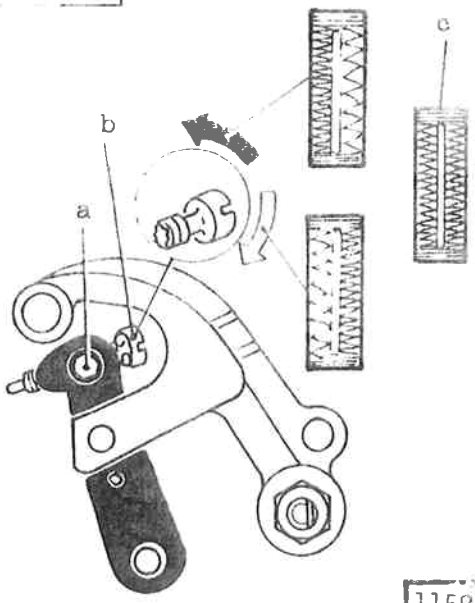
   Double check: Turn stitch length knob several times from A to 4 and sew again a sample.

AUTOMATIC BUTTONHOLE FEED 72 74





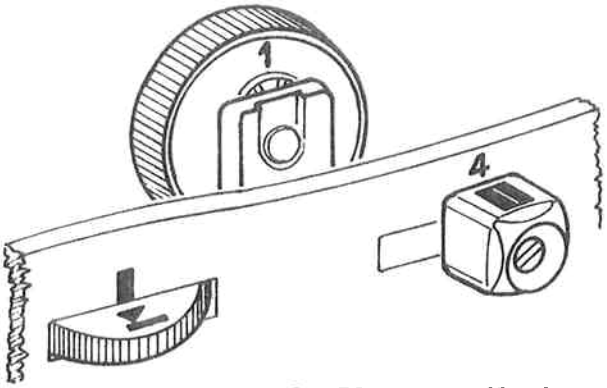


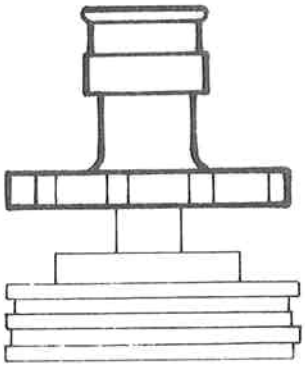


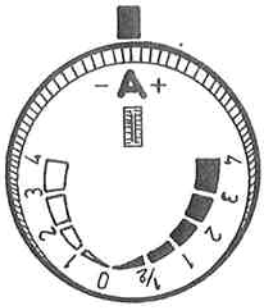
1. Make sure that stitch length knob is set in the notch and sew a sample with buttonhole foot.
2. Slightly loosen hexagonal screw "a" and adjust screw "b" to obtain the same density of stitches "c" on forward and reverse feed.

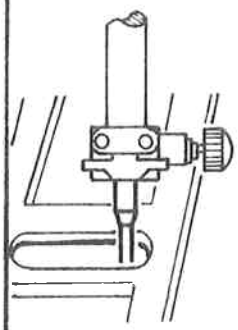
   The buttonhole must be equalled out in relation to the left row.
3. Tighten "a".

   Double check: Turn stitch length knob several times from A to 4 and sew another buttonhole.

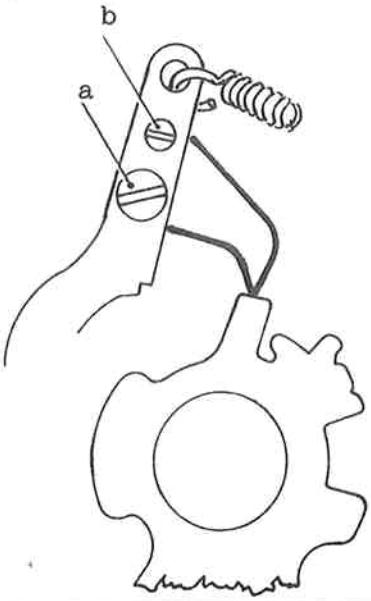


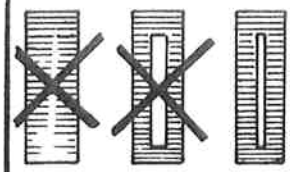


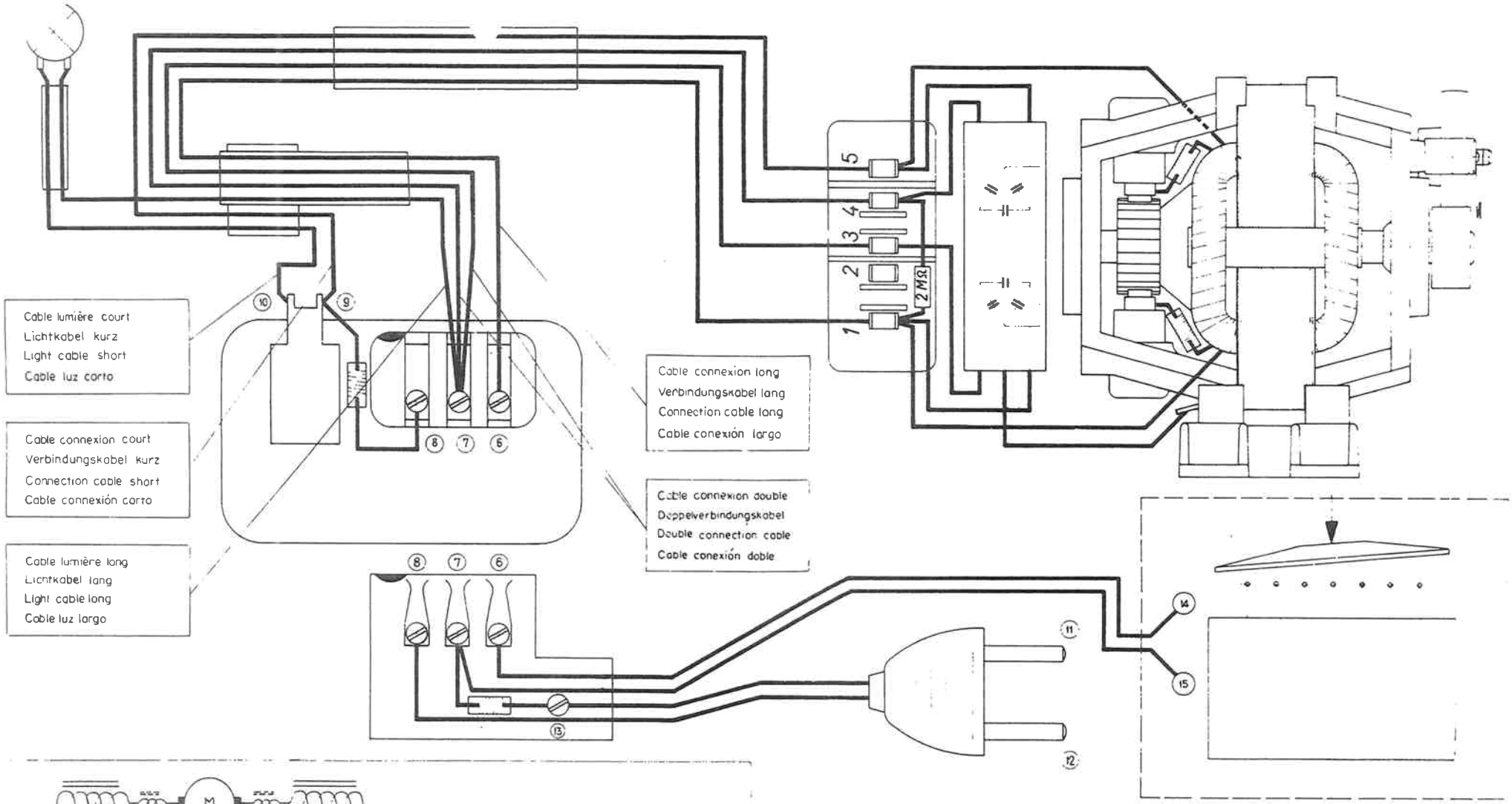


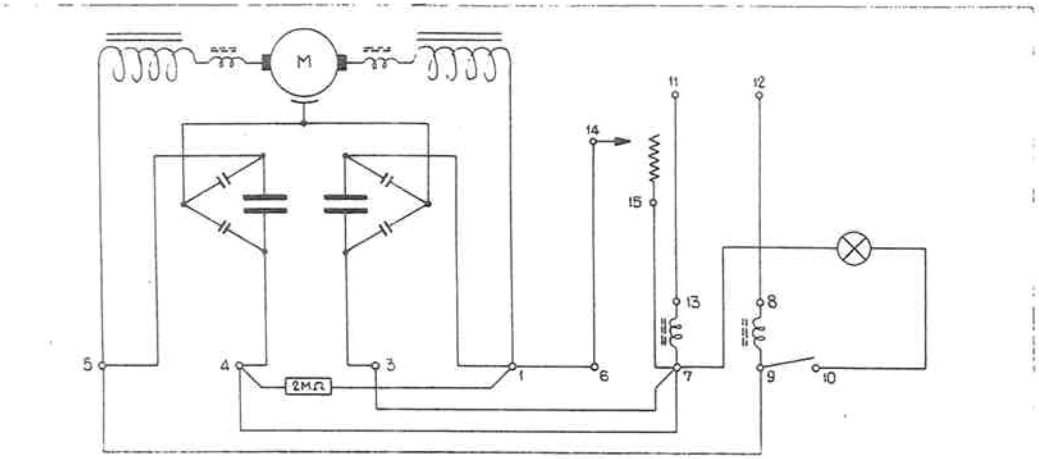


1. Place needle bar on the <u>right hand side</u> and at its <u>lowest position</u>.
2. Slightly loosen screw "a" and adjust eccentric "b" until needle bar stays immobile when stitch width knob is moved between 4-2-4.
3. Tighten "a" and recheck.
4. Sew a sample with buttonhole foot and readjust "b" if no satisfactory cutting space has been obtained.

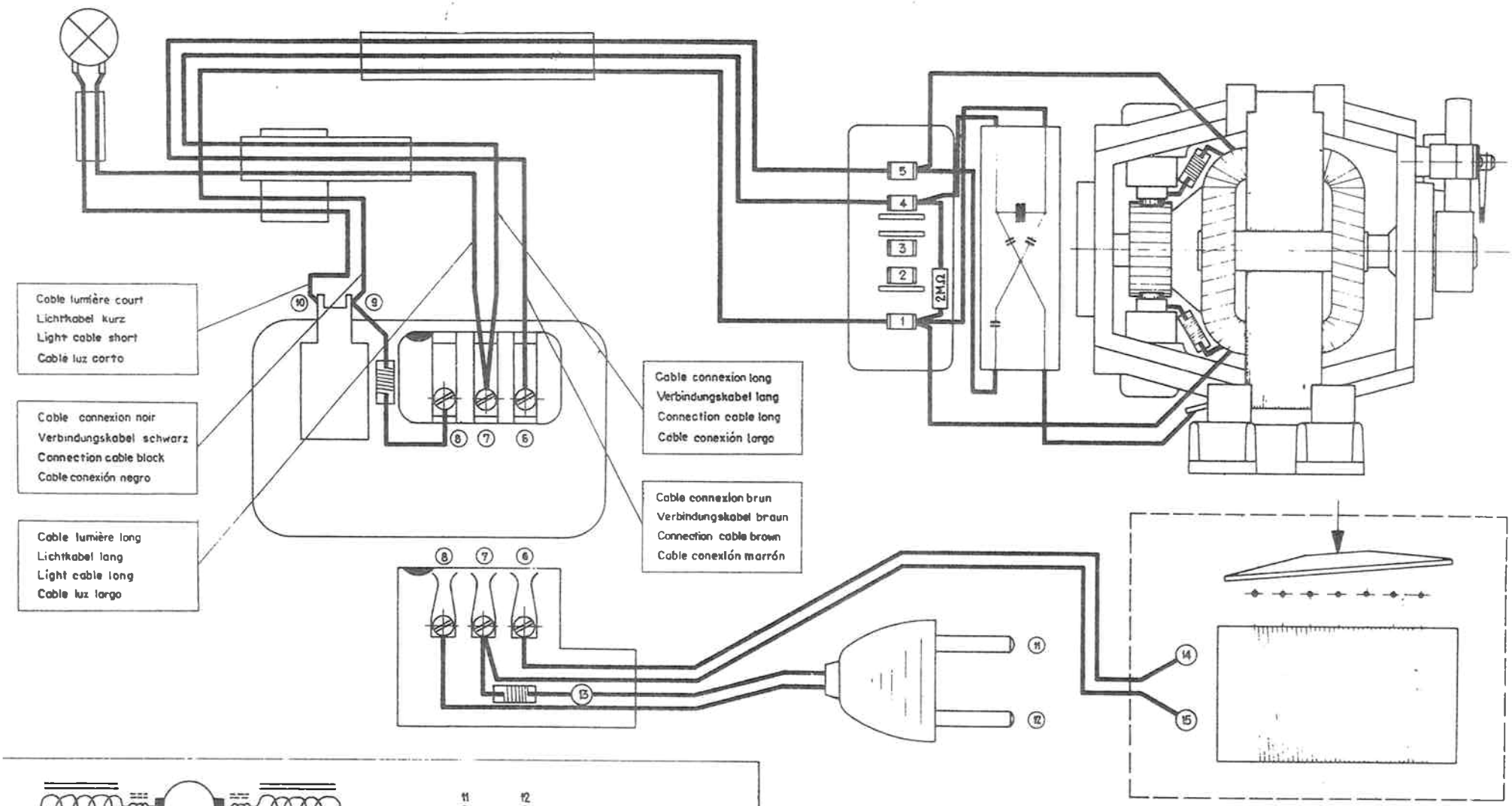


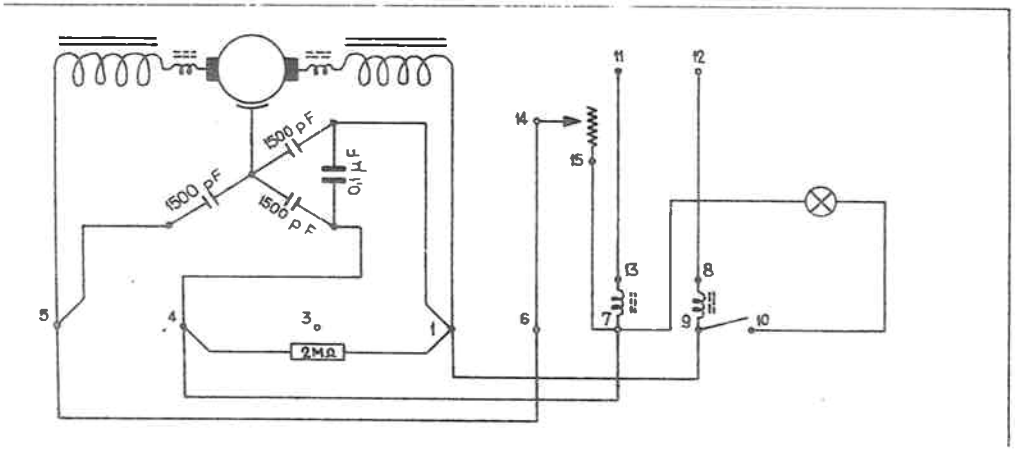




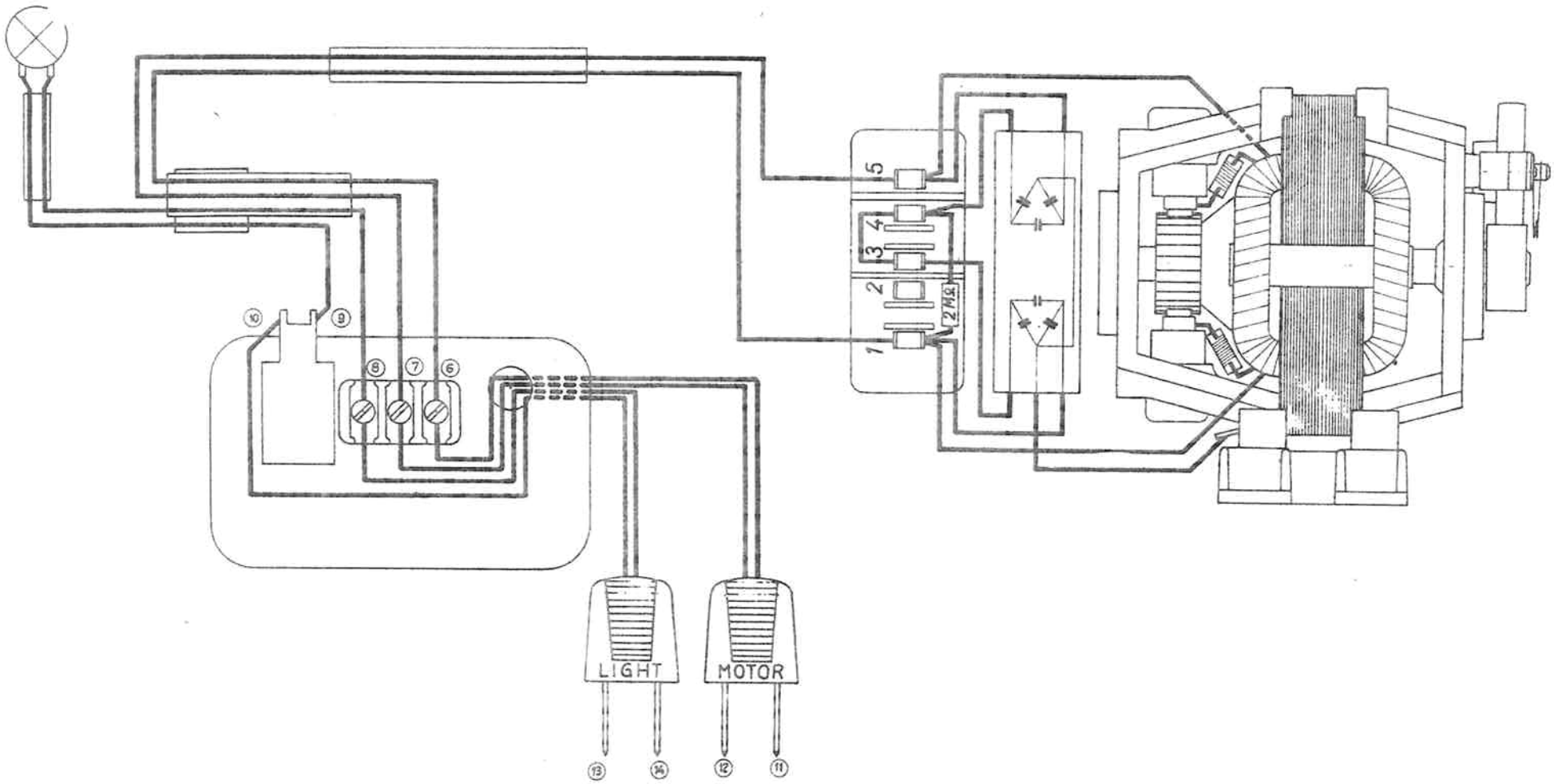


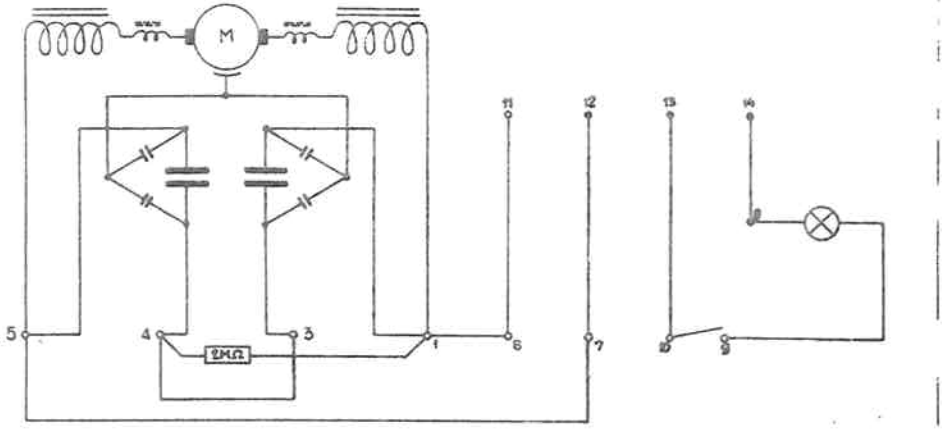
Pour moteurs avec condensateur	443 210 et 443 460
Für Motoren mit Kondensator	443 210 und 443 460
For motors with condenser	443 210 and 443 460
Para motores con condensador	443 210 y 443 460





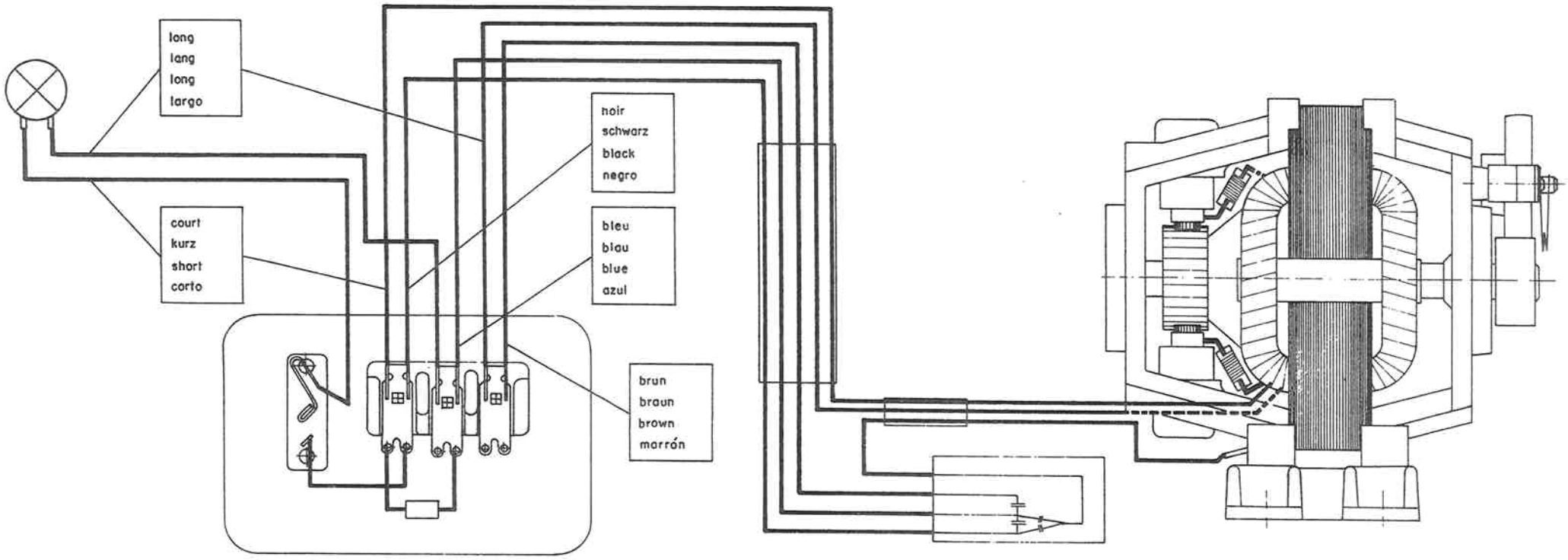
Pour moteurs avec condensateur 443 550
Für Motoren mit Kondensator 443 550
For motors with condenser 443 550
Para motores con condensador 443 550





Plana USA

Plana Canada

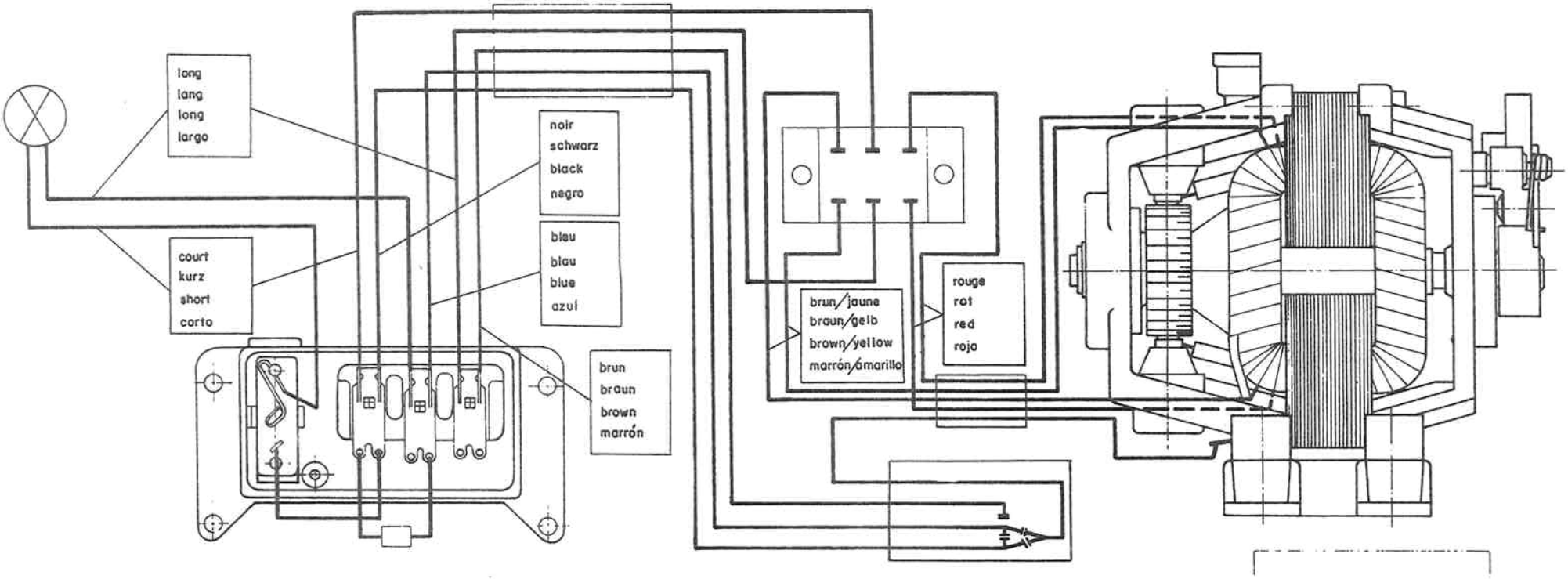


Pour moteurs mono-voltage avec condensateur 444250 ou 444260

Für Einspannungsmotoren mit Kondensator 444250 oder 444260

For mono-voltage motors with condenser 444250 or 444260

Para motores mono-voltaje con condensador 444250 ó 444260

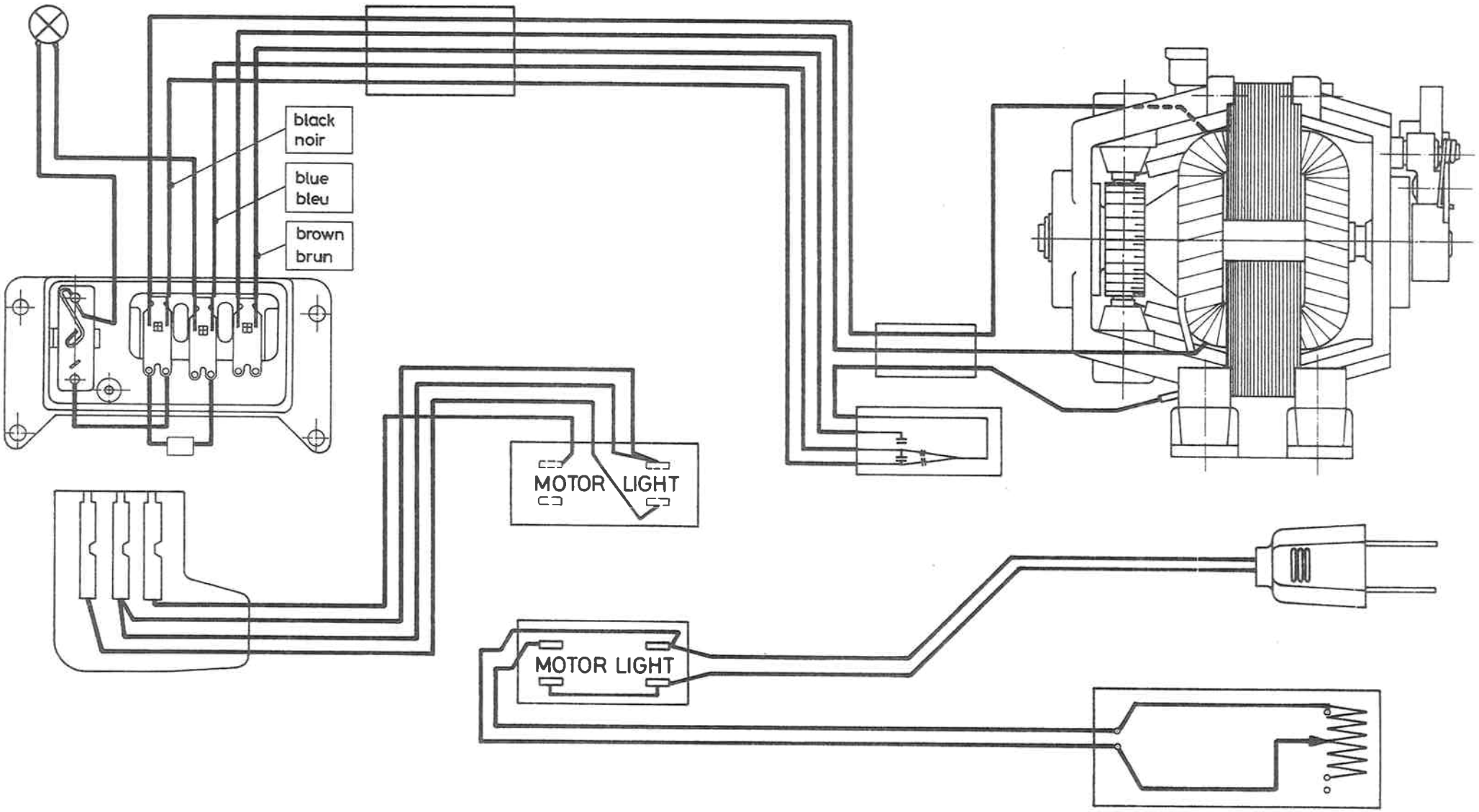


Pour moteurs bi-voltage avec condensateur 444250 ou 444260

Für Zweispannungsmotoren mit Kondensator 444250 oder 444260

For dual-voltage motors with condenser 444250 or 444260

Para motores bi-voltaje con condensador 444 250 ó 444 260



Plana U S A
Plana Canada